

**IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF IOWA
WESTERN DIVISION**

MICROSOURCE, LLC and GAVILON
FERTILIZER, LLC,

Plaintiffs,

v.

ECO WORLD GROUP, LLC, d/b/a
PRESIDION AG.,

Defendants.

ECO WORLD GROUP, LLC,
d/b/a PRESIDION AG. and ECO WORLD
RESEARCH AND DEVELOPMENT
GROUP, LLC,

Counterclaim-Plaintiffs,

v.

MICROSOURCE, LLC and GAVILON
FERTILIZER, LLC,

Counterclaim-Defendants.

No. 19-CV-04016-CJW-MAR

**MEMORANDUM OPINION
AND ORDER**

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This matter is before the Court on opposing motions for summary judgment on a counterclaim of patent infringement filed by counterclaim-plaintiffs Eco World Group, LLC, d/b/a Presidion AG (“Presidion”) and Eco World Research and Development Group, LLC (“Eco World”) (collectively “defendants”) against counterclaim-defendants Microsource, LLC (“Microsource”) and Gavilon Fertilizer, LLC (“Gavilon”) (collectively “plaintiffs”).¹ (Doc. 108). Plaintiffs’ Motion for Partial Summary Judgment is filed at Doc. 111. This matter is also before the Court on plaintiffs’ motion to exclude evidence. (Doc. 112). The patent claims at issue are claims 1–10 of the U.S. Patent No. 9,650,306 (the ’306 Patent) and claims 1–4 of the U.S. Patent No. 10,301,231 (the ’231 Patent).

On the question of validity, the Court finds that claims 1–4 of the ’231 Patent are invalid for obviousness, and thus **grants-in-part** plaintiffs’ motion for summary judgment of non-infringement with respect to the ’231 Patent. The Court does not find that claims 1–10 of the ’306 Patent are invalid.

On the question of claim construction, the Court construes the disputed terms of the ’306 Patent, and most relevantly **does not adopt** plaintiffs’ construction that the mixtures or the solvents “dissolve a solute.”

On the question of infringement, the Court **denies-in-part** plaintiffs’ motion to exclude evidence with respect to infringement evidence, **denies-in-part** plaintiffs’ motion for summary judgment of non-infringement with respect to the ’306 Patent, and **denies** defendants’ motion for summary judgment of infringement with respect to the ’306 Patent.

¹ The Court recognizes that Eco World Research and Development Group, LLC is not a defendant in this case, but for the sake of clarity in differentiating between the parties, the Court will refer to Eco World Group, LLC and Eco World Research and Development Group, LLC as “defendants” and Microsource, LLC and Gavilon Fertilizer, LLC as “plaintiffs.”

On the question of damages, the Court **grants-in-part** plaintiffs’ motion to exclude evidence with respect to damages evidence, **grants-in-part** plaintiffs’ motion for summary judgment of zero damages for infringement occurring before December 18, 2019, but **denies-in-part** plaintiffs’ motion for summary judgment of zero damages for infringement occurring on or after December 18, 2019.

I. BACKGROUND

A. Procedural History

At this stage², plaintiffs sued defendants for a declaration of noninfringement of the ’306 Patent (Doc. 57, at 22), and the ’231 Patent (Doc. 57, at 29), and a declaration of invalidity of the ’306 Patent (Doc. 57, at 35) and the ’231 Patent (Doc. 57, at 42). Defendants filed the counterclaim at issue, alleging that plaintiffs infringed on the claims 1–10 of the ’306 Patent and claims 1–4 of the ’231 Patent by manufacturing, using, and selling the NITROLOCK, NI-TEST, LOCK-N, and HI-TEC (collectively, the “Accused Products”) (Doc. 70).

Both parties filed claim construction briefs. (Docs. 94 (plaintiffs’ brief); 95 (defendants’ brief); 96 (defendants’ reply brief); 97 (plaintiffs’ reply brief)). Later, defendants moved for partial summary judgment of infringement by the NITROLOCK, HI-TEST, LOCK-N, and HI-TEC. (Doc. 108-1). In turn, plaintiffs moved to exclude evidence of infringement and damages (Doc. 112) and moved for partial summary judgment of non-infringement and lack of damages, naming the NITROLOCK and the HI-TEST. (Doc. 111-1, at 35). Both parties timely resisted the opposing party’s motions.³ (Docs. 131 & 132). And both parties timely filed reply briefs. (Docs. 141 &

² After the parties stipulated to dismissal without prejudice, the dispute narrowed to the ’306 Patent and the ’231 Patent. (Doc. 103).

³ The Court stayed this litigation when other parties opened an *inter partes* review (“IPR”) on

142).

B. Factual Background

The Court first turns to the background of the patents themselves, and then their ownership and license history.

1. The Patents

For purposes of this discussion, defendants Eco World and Presidion are licensees to the '306 Patent and the '231 patent.

The '306 Patent claims an improved liquid formulation of nitrification inhibitors. '306 Patent. These limit nitrification, which is a biological process that consumes nitrogen in the soil and releases nitrous oxide (N₂O), thus harming crop growth, reducing the efficiency of nitrogen fertilizers, and contributing to global warming and other environmental concerns. (*See id.*).

The '231 patent in turn claims an improved solvent system to formulate and apply N-alkyl thiophosphoric triamide urease inhibitors. (*See* '231 Patent). These limit ureases, which are soil enzymes that break urea into carbon dioxide and ammonia, thus wasting urea-based fertilizers and damaging the environment. (*See id.*). Notably, the '231 Patent and U.S. Patent No. 10,221,108 (the '108 Patent) are related, because they claim priority to U.S. Provisional Application No. 61/980,675. ('108 patent, '231 Patent). The Patent Trials and Appeals Board ("Board") invalidated certain claims of the '108 Patent in *Solvay USA Inc. v. Worldsource Enterprises, LLC, et al.*, PGR2019-00046. (Doc. 111-12, at 37).

the '231 Patent, pending the issuance of a Final Written Decision on the '231 Patent by the Board. (Doc. 121). After that IPR settled without a Final Written Decision, the Court reopened this litigation. (Doc. 123).

2. *Ownership and License History*

Both patents changed hands multiple times as they passed from the inventors to defendants.

On May 16, 2017, the U.S. Patent and Trademark Office (“USPTO”) issued the ’306 Patent. ’306 Patent, Date of Patent. The ’306 Patent stemmed from an application labeled 14/689,470, and a provisional application labeled 61/980,675. *Id.* Each inventor assigned the ’306 Patent to Worldsource Enterprises, LLC, between November 14, 2018, and December 18, 2018. (Doc. 108-3, at 53). Months earlier, however, in an agreement last revised on July 1, 2018, Worldsource Enterprises, LLC, licensed the ’306 Patent to defendant (counter-claim plaintiff) Eco World Research and Development Group under the terms of a First Amendment to a Master Agreement.⁴ (Doc. 111-11, at 12–14). Defendant (counter-claim plaintiff) Eco World Research and Development Group in turn licensed the ’306 Patent to defendant Presidion, purportedly effective as of April 23, 2018. (Doc. 116-2, at 73, 91).

On May 28, 2019, the USPTO issued the ’231 patent. (’231 Patent, at Doc. 70-2). This patent stemmed from an application labeled 15/636,211. (*Id.*). Though no party provided a copy of the assignment of the ’231 Patent, the Patent Assignment Abstract of Title indicates that the inventors assigned the application that would become the ’231 Patent to Worldsource Enterprises, LLC, on December 7, 2018. UNITED STATES PATENT AND TRADEMARK OFFICE, *15/636,211, Public Patent Application Information Retrieval*, <https://portal.uspto.gov/pair/PublicPair> (last visited Feb. 10, 2022). Months earlier, on July 1, 2018, Worldsource Enterprises, LLC, licensed the application that would become this patent to Eco World under the terms of the First

⁴ The Master Agreement was purportedly effective some day in April 2017, but it only licensed patent applications and provisional applications to which the ’306 Patent did not claim priority. (Doc. 111-11, at 10). The first appearance of the ’306 Patent is thus in the First Amendment to the Master Agreement, last revised July 1, 2018. (*Id.*, at 14).

Amendment to the Master Agreement. (Doc. 116-2, at 91).

II. DISCUSSION

In resolving these three motions, the Court must address (1) whether the '306 and '231 patents are invalid; (2) the proper claim construction for their claim terms; (3) the admissibility of infringement evidence; (4) the dueling motions for summary judgment on infringement/non-infringement; (5) the admissibility of damages evidence; and (6) plaintiffs' motion for summary judgment on damages. The Court takes each issue in turn.

A. Summary Judgment Standard

Summary judgment is appropriate when “the movant shows that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law.” FED. R. CIV. P. 56(a). When asserting that a fact is undisputed or is genuinely disputed, a party must support the assertion by “citing to particular parts of materials in the record, including depositions, documents, electronically stored information, affidavits or declarations, stipulations . . . , admissions, interrogatory answers, or other materials.” FED. R. CIV. P. 56(c)(1)(A); *see Celotex Corp. v. Catrett*, 477 U.S. 317, 322 (1986). Alternatively, a party may show that “the materials cited do not establish the absence or presence of a genuine dispute, or that an adverse party cannot produce admissible evidence to support the fact.” FED. R. CIV. P. 56(c)(1)(B). More specifically, “[a] party may object that the material cited to support or dispute a fact cannot be presented in a form that would be admissible in evidence.” FED. R. CIV. P. 56(c)(2).

A fact is “material” if it “might affect the outcome of the suit under the governing law.” *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986) (citation omitted). “An issue of material fact is genuine if it has a real basis in the record.” *Hartnagel v. Norman*, 953 F.2d 394, 395 (8th Cir. 1992). It is also genuine “when a reasonable jury

could return a verdict for the nonmoving party on the question,” *Wood v. DaimlerChrysler Corp.*, 409 F.3d 984, 990 (8th Cir. 2005) (internal quotation marks omitted). Evidence that presents only “some metaphysical doubt as to the material facts,” *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 586 (1986), or evidence that is “merely colorable” or “not significantly probative,” *Anderson*, 477 U.S. at 249–50, does not make an issue of fact genuine. In sum, a genuine issue of material fact requires “sufficient evidence supporting the claimed factual dispute” that it “require[s] a jury or judge to resolve the parties’ differing versions of the truth at trial.” *Id.*, at 249 (citation and internal quotation marks omitted).

The party moving for summary judgment bears “the initial responsibility of informing the district court of the basis for its motion and identifying those portions of the record which show a lack of a genuine issue.” *Hartnagel*, 953 F.2d at 395. The opposing party may not then simply point to allegations made in her complaint but must identify and provide evidence of “specific facts creating a triable controversy.” *Jaurequi v. Carter Mfg. Co.*, 173 F.3d 1076, 1085 (8th Cir. 1999) (internal quotation marks omitted). When considering a motion for summary judgment, “[t]he court need consider only the cited materials, but it may consider other materials in the record.” FED. R. CIV. P. 56(c)(3). Even so, the moving party does not meet its burden by simply providing a massive record, and the Court “will not sort through a voluminous record in an effort to find support for the plaintiff’s allegations.” *Howard v. Columbia Pub. Sch. Dist.*, 363 F.3d 797, 800 (8th Cir. 2004).

The moving party’s burden of production turns on its burden of persuasion at trial. If the moving party bears the burden of persuasion on the relevant issue at trial, it must support its motion with credible evidence available under Rule 56(c) that would entitle it to a directed verdict if not challenged at trial. *Celotex Corp.*, 477 U.S. at 331; *Firemen’s Fund Ins. Co. v. Thien*, 8 F.3d 1307, 1310 (8th Cir. 1993). But, if the moving party

does not bear the burden of persuasion at trial, it has two options to satisfy its Rule 56 burden of production. First, it may submit affirmative evidence that negates an essential element of the nonmoving party's claim. *Celotex Corp.*, 477 U.S. at 331 (1986); *see also Bedford v. Doe*, 880 F.3d 993, 996 (8th Cir. 2018). Second, it may show that the nonmoving party's evidence is insufficient to establish an essential element of the nonmoving party's claim. *Celotex Corp.*, 477 U.S. at 331 (1986); *see also Bedford v. Doe*, 880 F.3d at 996.

Once the moving party meets its burden of production, the nonmoving party must go beyond the pleadings and show by depositions, affidavits, or other evidence “specific facts which create a genuine issue for trial.” *See Mosley v. City of Northwoods*, 415 F.3d 908, 910 (8th Cir. 2005) (internal quotation marks omitted). In determining whether a genuine issue of material fact exists, courts must view the evidence in the light most favorable to the nonmoving party, giving that party the benefit of all reasonable inferences that can be drawn from the facts. *Tolan v. Cotton*, 572 U.S. 650, 651 (2014); *Matsushita*, 475 U.S. at 587–88 (citation omitted); *see also Reed v. City of St. Charles*, 561 F.3d 788, 790 (8th Cir. 2009). A court does “not weigh the evidence or attempt to determine the credibility of the witnesses.” *Kammueler v. Loomis, Fargo & Co.*, 383 F.3d 779, 784 (8th Cir. 2004). Rather, a “court’s function is to determine whether a dispute about a material fact is genuine.” *Quick v. Donaldson Co.*, 90 F.3d 1372, 1377 (8th Cir. 1996).

B. Validity of the '231 Patent

Plaintiffs assert they are entitled to summary judgment on their motion for a declaration of the invalidity of the '231 patent due to collateral estoppel, the persuasiveness of the Board's factual findings, and a purported failure to list Artie McKim as an inventor. (Doc. 111-1, at 38–44). Defendants resist these arguments.

The Court finds that claims 1–4 of the '231 patent (the “asserted claims”) are

invalid for obviousness, because collateral estoppel precludes the question of these claims' validity when the Board invalidated substantially similar claims for obviousness, '108 claims 1–20⁵ (the “invalidated claims”) in *Solvay USA Inc. v. Worldsource Enterprises, LLC, et al.*, PGR2019-00046. (Doc. 111-1, at 37). The Court does not reach the persuasiveness argument. Nor does the Court find that the failure to list Artie McKim is a ground to invalidate every claim of the '231 patent. Thus, the Court **grants** plaintiffs' summary judgment on their motion for a declaration of the '231 Patent's invalidity.

1. Principles

Under Title 35, United States Code, Section 103, a claimed invention is unpatentable “if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious” to one of ordinary skill in the relevant art. *Intercontinental Great Brands LLC v. Kellogg N. Am. Co.*, 869 F.3d 1336, 1343 (Fed. Cir. 2017) (quoting 35 U.S.C. §103). Obviousness is a legal question based on underlying factual determinations. *Id.* (collecting cases). The factual determinations include (1) the scope and content of the prior art, (2) differences between the prior art and the claims at issue, (3) the level of ordinary skill in the pertinent art, (4) the relevant skilled artisan's motivation to combine the existing prior art, and (5) objective indicia of non-obviousness. *Id.* (collecting cases).

Collateral estoppel can apply to common issues of invalidity in suits that involve different but related patents. *Ohio Willow Wood Co. v. Alps S., LLC*, 735 F.3d 1333, 1341 (Fed. Cir. 2013). The same is true for judgments issued by the Board, which are immediately entitled to preclusive effect. *XY, LLC v. Trans Ova Genetics*, 890 F.3d 1282, 1294 (Fed. Cir. 2018).

⁵ Here, the present claims are related to the invalidated claims because both descend from U.S. Provisional Application No. 61/980,675. ('108 patent, '231 Patent).

Collateral estoppel—issue preclusion—“provides that once a court has decided an issue of fact or law necessary to its judgment, that decision may preclude relitigation of the issue in a suit on a different cause of action involving a party to the first case.” *Webb v. City of Waterloo*, No. 17-CV-2001-CJW-MAR, 2019 WL 6736219, at *17 (N.D. Iowa Dec. 11, 2019) (citing *Advanced Commc’ns Corp. v. MCI Commc’ns Corp.*, 263 F.3d 793, 795 (8th Cir. 2001)). Issue preclusion is generally guided by regional circuit precedent, but Federal Circuit precedent governs the aspects of that determination that involve substantive issues of patent law. *Aspex Eyewear, Inc. v. Zenzi Optical Inc.*, 713 F.3d 1377, 1380 (Fed. Cir. 2013).

Turning to Federal Circuit precedent, the application of collateral estoppel turns on the identity of the issues litigated in the prior action and the present action. *Ohio Willow Wood Co.*, 735 F.3d at 1342; *see also Soverain Software LLC v. Victoria’s Secret Direct Brand Mgmt., LLC*, 778 F.3d 1311, 1319 (Fed. Cir. 2015). If the asserted claims in the present action pose a new issue of invalidity that the prior action did not resolve, collateral estoppel cannot apply. *See Ohio Willow Wood*, 735 F.3d at 1342. No such issue arises when the asserted claims and the invalidated claims are substantially similar so that they use only “slightly different language to describe substantially the same invention.” *Id.* Even if the asserted claims are different from the invalidated claims, no such issue arises if neither the text of the patent nor any statement by patentees attribute any “importance or significance” to these additional elements. *Bourns, Inc. v. United States*, 210 Ct. Cl. 642, 656, 537 F.2d 486, 494 (1976) (a holding by the direct predecessor to the Federal Circuit). To be important or significant, the differences must go beyond the previously litigated claims and achieve new results or desirable goals stated in the record. *Bourns*, 537 F.2d at 495.

If a prior claim is invalidated for obviousness, then asserted claims of broader scope raise no new issues of invalidity. *See Ormco Corp. v. Align Tech., Inc.*, 498 F.3d

1307, 1319 (Fed. Cir. 2007) (“Because claims 10 and 17 were found to have been obvious, the broader claims 1 and 11 must also have been obvious.”); *Server Tech., Inc. v. Schneider Elec. IT Corp.*, 304 F. Supp. 3d 965, 972 (D. Nev. 2018) (invalidating a patent claim for obviousness when that claim was broader than the invalidated claim of another patent); *see also Tyco Healthcare Grp. LP v. Applied Med. Res. Corp.*, No. 9:09-CV-176, 2013 WL 4757948, at *4 (E.D. Tex. Sept. 4, 2013), *aff’d*, 579 F. App’x 1005 (Fed. Cir. 2014).

Though patents are presumed valid, *see* 35 U.S.C. § 282, a patentee who opposes summary judgment bears the burden to explain how a new and different limitation changes the analysis of whether a patent should nevertheless be deemed invalid. *Ohio Willow Wood*, 735 F.3d at 1343; *Soverain Software LLC*, 778 F.3d at 1319.

2. Application

Though both parties made arguments concerning collateral estoppel, neither party addressed the relevant claims in full detail. Plaintiffs compared claims 1–4 of the ’231 patent to the invalidated claims in aggregate, mixing and matching limitations from different invalidated claims to find similarities. (Doc. 111-1, at 41). Plaintiffs also asserted broadly that “[t]o the extent there are differences, the asserted claims of the ’231 Patent are broader in scope than those of the ’108 Patent” and are therefore necessarily invalid. *Id.* The Court construes defendants’ resistance to argue that two new and different limitations change the invalidity analysis: (1) the invalidated claim 1’s requirement that the claimed composition include urea, and (2) the present claim 1’s requirement that the composition include “one or more members selected from the group consisting of flow aids, silicas, surfactants and dyes/colorants.” (Doc. 131, at 26). Plaintiffs later addressed these arguments. (Doc. 141, at 13–14).

For the sake of precision, the Court compares each of the present asserted claims

to claim 3 of the '108 patent (“’108 claim 3”).⁶ '108 claim 3 depends on '108 claim 1, and thus incorporates each of '108 claim 1's limitations. As explained below in more detail, each of the '231 claims are broader than '108 claim 3, because each claim possesses fewer limitations than '108 claim 3. The Board invalidated '108 claim 3 for obviousness in light of two combinations of prior art. (Doc. 111-12, at 52). Thus, each of the '231 claims, being broader than an invalidated-for-obviousness claim, is itself obvious in light of the same reasons and references. Therefore, none of the '231 claims present a new question of invalidity.

a. '231 claim 1

The Court finds that '231 claim 1 is broader than '108 claim 3. Because '108 claim 3 was found obvious, collateral estoppel dictates that '231 claim 1 is obvious.

'231 claim 1 claims:

1. A liquid fertilizer additive composition comprising one or more urease inhibitor(s) and one or more aprotic solvents wherein said aprotic solvent comprises one or more members selected from the group consisting of

- a) 2-methoxyethyl ether,
- b) cyclohexylpyrrolidone,
- c) 1,3 dimethyl-2-imidazolidinone,
- d) organo phosphorous liquid hexamethyl phosphoramidate, and
- e) dimethyl sulfoxide;

wherein said composition weight percent comprises 45-5% of said urease inhibitor(s) wherein the composition further comprises one or more members selected from the group consisting of flow aids, silicas, surfactants and dyes/colorants.

⁶ Plaintiffs assert that the relevant invalidity issues concern two prior art combinations: (1) “Iannotta” combined with “CN400,” and (2) “Kolc” combined with “CN400.” (Doc. 141, at 13). Defendants do not specify in their resistance which prior art combinations they challenge. Because '108 claim 3 was invalidated as obvious under both combinations (Doc. 111-1, at 52), the Court need not distinguish between these two combinations any further.

'108 claim 3, dependent on claim 1, claims:

“1. A composition comprising:

a. urea,

b. a liquid solution comprised of a urease inhibitor that has been solubilized within an aprotic solvent wherein said aprotic solvent comprises dimethyl sulfoxide wherein the liquid solution comprises 45-5% of said urease inhibitor and 55-95% of dimethyl sulfoxide and wherein the urease inhibitor is N-(n-butyl) thiophosphoric triamide[,]” and

“3. The composition of claim 1, wherein the composition further comprises one or more members selected from the group consisting of buffers, flow aides, silicas, surfactants, and dyes/colorants.”

(emphasis added and representing differences from 231 claim 1).

Differences exist between these claims. Unlike '231 claim 1, '108 claim 3 includes a limitation that the composition includes urea, that the urease inhibitor is N-(n-butyl) thiophosphoric triamide (NBPT), and that the aprotic solvent is dimethyl sulfoxide (DMSO). Despite defendants' contention, both claims include a limitation that the composition includes “one or more members selected from the group consisting of buffers, flow aides, silicas, surfactants, and dyes/colorants.” (Doc. 111-12, at 37–38).

These differences do not change the question of invalidity or obviousness, because the Court finds that '231 claim 1 is broader than '108 claim 3. *Ormco Corp.*, 498 F.3d at 1319. First, '108 claim 3 recites that the composition includes urea, so it reads only on compositions that include urea. But, '231 claim 1 does not recite that the composition includes urea, so it may read upon—that is, apply to—compositions that include urea and compositions that do not. Next, '108 claim 3 recites that the urease inhibitor is N-(n-butyl) thiophosphoric triamide (“NBPT”), so it reads only on compositions including NBPT. But, '231 claim 1 does not recite that the urease inhibitor is NBPT, so it reads on compositions with NBPT and compositions without NBPT. Finally, '108 claim 3 also recites that the aprotic solvent comprises dimethyl sulfoxide (DMSO), so it reads only

upon compositions that have DMSO. But, '231 claim 1 recites that the aprotic solvent comprises one or more members from the group consisting of DMSO and other possible aprotic solvents. It reads on compositions where DMSO is the aprotic solvent, but it also reads on compositions without DMSO but with the other possible aprotic solvents.

Because '231 claim 1 is broader than '108 claim 3, '231 claim 1 would be invalid for obviousness in light of the same references and reasons. Therefore, the Court finds that collateral estoppel dictates that '231 claim 1 is invalid.

b. '231 claim 2

The Court finds that '231 claim 2 is broader than '108 claim 3.

'231 claim 2 depends on claim 1, so it incorporates the limitations of claim 1. But in addition, it recites that “the composition comprises one or more urease inhibitors selected from the group consisting of aliphatic phosphoric triamide, phosphoramides and N-alkyl thiophosphoric triamides.” The Court finds that even this limitation is broader than '108 claim 1's requirement that the urease inhibitor be NBPT.

N-alkyl thiophosphoric triamides include '108 claim 3's N-(n-butyl) triphosphoric triamide (NBPT). In organic chemistry nomenclature, the term alkyl includes the term butyl. According to the IUPAC Blue Book, “alkyl” is the generic term ascribed to a functional group derived from carbon chains. INT'L UNION OF PURE AND APPLIED CHEMISTRY, NOMENCLATURE OF ORGANIC CHEMISTRY: CHAPTER P-2 PARENT HYDRIDES, P-29.3.2.1, available at <https://iupac.qmul.ac.uk/BlueBook/P2.html#2902>. The specific name for that group depends on the number of carbons in the chain. *Id.* For example, a butyl group is a carbon chain made up of four carbon atoms. *Id.* Therefore, the term alkyl encompasses the term butyl.

'231 claim 2, thus, is broader than '108 claim 3. '108 claim 3 reads upon only compositions with NBPT. In turn, '231 claim 2 reads upon compositions that include NBPT (as NBPT is one subset of an N-alkyl thiophosphoric triamide) but also upon

compositions without NBPT. For purposes of this order, it could read on compositions with other N-alkyl thiophosphoric triamides which replace the four-carbon butyl group with ethyl groups (two carbons), propyl groups (three carbons), and so on. In addition, the '231 claim 2 could read upon compositions that replace the NBPT with an aliphatic phosphoric triamide or a phosphoramidate.

Thus, '231 claim 2 is broader than already-invalidated '108 claim 3. Because '108 claim 3 was found obvious, collateral estoppel dictates that '231 claim 2 is obvious. Thus, the Court finds that '231 claim 2 is invalid for obviousness due to collateral estoppel.

c. '231 claim 3

The Court finds that '231 claim 3 is broader than '108 claim 3. Because '108 claim 3 was found obvious, collateral estoppel dictates that '231 claim 3 is obvious.

'231 claim 3 depends upon '231 claim 1, and in addition recites that the urease inhibitor must be NBPT. Still, for the same reasons as for '231 claim 1, the Court finds that '231 claim 3 is still broader than '108 claim 3. '108 claim 3 reads only on compositions that include urea, while '231 claim 3 reads on compositions with urea and compositions without urea. And, '108 claim 3 reads only on compositions that have DMSO, while '231 claim 3 reads upon compositions without DMSO.

Thus, '231 claim 3 is broader than already-invalidated '108 claim 3. Because '108 claim 3 was found obvious, collateral estoppel dictates that '231 claim 3 is obvious. Thus, the Court finds that '231 claim 3 is invalid for obviousness due to collateral estoppel.

d. '231 claim 4

The Court finds that '231 claim 4 is broader than '108 claim 3. Because '108 claim 3 was found obvious, collateral estoppel dictates that '231 claim 4 is obvious.

'231 claim 4 depends upon '231 claim 1, and in addition the limitations of claim

1, it recites that the aprotic solvent comprises DMSO. Claim 4 does not depend on claims 2 or 3, so it does not recite any specific urease inhibitor. As illustrated above, '231 claim 4 is broader than '108 claim 3: '108 claim 3 reads only on compositions that include urea, while '231 claim 1 reads on compositions with urea and compositions without urea. '108 claim 3 reads only on compositions where the urease inhibitor is NBPT, where '231 claim 1 reads on compositions with NBPT and compositions with other urease inhibitors and not NBPT.

Thus, '231 claim 4 is broader than already-invalidated '108 claim 3. Because '108 claim 3 was found obvious, collateral estoppel dictates that '231 claim 4 is obvious. Thus, the Court finds that '231 claim 4 is invalid for obviousness due to collateral estoppel.

In sum, the Court finds that collateral estoppel precludes relitigation of the validity of '231 claims 1–4, because the same issues of obviousness were presented in *Solvay* by the Board when it invalidated claim 3 of the '108 patent in light of the Iannotta and CN400 combination and the Kolc and CN400 combination. The Court does not reach plaintiffs' argument about adopting the *Solvay* Board's factual findings of obviousness. (Doc. 111-1, at 41).

Separately, the Court finds that the omission of Artie McKim as a listed inventor is not a ground to invalidate every claim of the '231 patent. (Doc. 111-1, at 43). Although a patent is invalid if it does not reflect its true inventorship, inventorship is a claim-by-claim question. *Egenera, Inc. v. Cisco Sys.*, 972 F.3d 1367, 1376 (Fed. Cir. 2020). The party challenging patent validity for omission of an inventor must present clear and convincing evidence that the unnamed but alleged co-inventor made a contribution to the conception of at least one claim of the patent “that is not insignificant in quality, when that contribution is measured against the dimension of the full invention.” *CardiaQ Valve Techs., Inc. v. Neovasc Inc.*, 708 F. App'x 654, 658 (Fed.

Cir. 2017). When multiple inventors are listed on the patent, a person is an inventor only if she does more than inform other inventors about well-known concepts or the state of the prior art. *Dana-Farber Cancer Inst., Inc. v. Ono Pharm. Co.*, 964 F.3d 1365, 1371–72 (Fed. Cir. 2020).

Here, plaintiffs assert that Artie McKim is a co-inventor, but plaintiffs did not specify to which claims McKim contributed. (Doc. 111-1, at 43). Because inventorship is on a claim-by-claim basis, that failure alone defeats this argument. Furthermore, McKim did not appear to do more than explain well-known concepts, because all McKim did was supply DMSO to the inventors and give the inventors advice on DMSO properties. (Docs. 131, at 29; 131-1, at 10; 111-12, at 60–61). Even in the light most favorable to plaintiffs, plaintiffs still did not show how McKim provided more than just the properties of DMSO to any of the challenged claims. Therefore, at this stage, the Court does not find McKim to be a co-inventor whose omission invalidates the '231 patent.

C. Validity of the '306 Patent

Plaintiffs assert that the '306 Patent should be found invalid for indefiniteness. (Doc. 111-1, at 28–29). A claim is indefinite if the claim “read in light of the specification” and “the prosecution history,” “fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014).

Each claim of a patent is “presumed valid.” 35 U.S.C. § 282. The party seeking to prove invalidity has the burden of proof and must do so by a clear and convincing evidence standard. *Microsoft Corp. v. i4i Ltd. P’ship*, 564 U.S. 91, 95 (2011). Because plaintiffs have the burden of persuasion on invalidity, and because plaintiffs moved for summary judgment, it has the initial burden of proof to support a finding of invalidity with credible evidence that, if unchallenged, would entitle it to a directed verdict. FED.

R. CIV. P. 56(e-f). *Celotex Corp. v. Catrett*, 477 U.S. 317, 331 (1986).

Plaintiffs assert that the claims 1–10 of the '306 Patent should be found invalid for indefiniteness of a limitation that the composition has a specific “chill point.” (Doc. 111-1, at 28). Plaintiffs assert that “chill point” is indefinite because defendants’ expert—Dr. Bowden—offered “contradictory testimony” about that term when Dr. Bowden “equated the term ‘Chill Point’ and ‘Freeze Point’ in the report,” and then testified that “Chill Point” and “Freeze Point” could be but were not necessarily equivalent. (Doc. 111-1, at 25).

The Court does not read the record to suggest that Dr. Bowden offered contradictory definitions of “chill point” and “freeze point.” Dr. Bowden testified that a freeze point “is when a liquid becomes a solid” and that a chill point is when “what’s in solution precipitates out.” (Doc. 111-11, at 67). When asked if the terms were interchangeable, Bowden said: “It’s tricky.” (*Id.*, at 68). Specifically, he provided the different definitions for freeze point and the chill point, and then said, “a chill point could be the same as a freeze point but is not necessarily the same.” (*Id.*).

The Court does not find this statement to mean that Dr. Bowden gave “chill point” and “freeze point” the same definition. Instead, the Court finds that Dr. Bowden’s testimony means some substances and solutions can have the same chill point and freeze point by “precipitat[ing] out” and becoming “a solid” at the same temperature. (*Id.*, at 68). This is not contradictory testimony about the “chill point” term, so there is no confusion on the “chill point” term.

Therefore, plaintiffs did not meet their initial burden to show that the “chill point” limitation of claims 1-10 of the '306 Patent were indefinite. The Court, thus, **denies** summary judgment on plaintiffs’ motion for a declaratory judgment that the '306 Patent is invalid.

D. Claim Construction for the '306 Patent

Having invalidated the relevant claims of the '231 patent, the Court turns to construing certain disputed terms in claims 1–10 of the '306 Patent. Because claims 1–4 of the '231 patent are invalid, the Court cannot reach their claim construction. *St. Jude Med., Inc. v. Access Closure, Inc.*, 729 F.3d 1369, 1380 (Fed. Cir. 2013).

1. Principles of Claim Construction

Patent claims define the invention to which the patentee has the right to exclude others from practicing. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005). The Court, not the jury, declares the meaning of a patent claim. *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 387 (1996). In deciding this meaning, the Court is not bound to either party's proposed claim construction, but may adopt its own appropriate construction. *Homeland Housewares, LLC v. Whirlpool Corp.*, 865 F.3d 1372, 1376 (Fed. Cir. 2017). But the adopted construction must not change the scope of what the claims exclude: it cannot read new limitations into the claim, but can only give meaning to the limitations actually contained in the claim. *Am. Piledriving Equip., Inc. v. Geoquip, Inc.*, 637 F.3d 1324, 1331 (Fed. Cir. 2011).

The meaning of the words of a claim is typically “their ordinary and customary meaning.” *Phillips v. AWH Corp.*, 415 F.3d at 1312 (quotation omitted). The ordinary and customary meaning is the meaning that a “person of ordinary skill in the art” would assign to the words after reading the entire patent, including the specification and the prosecution history. *Id.*, at 1313; *Thorner v. Sony Compute. Ent. Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012). It does not come from the meaning of those same words in a different patent. *e.Digital Corp. v. Futurewei Techs., Inc.*, 772 F.3d 723, 727 (Fed. Cir. 2014).

Two exceptions apply to this typical meaning: “1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full

scope of the claim term either in the specification or during prosecution.” *Thorner*, 669 F.3d at 1365. But “[t]he standards for finding lexicography and disavowal are exacting.” *Hill-Rom Servs. v. Stryker Corp.*, 755 F.3d 1367, 1371 (Fed. Cir. 2014). To act as its own lexicographer, a patentee must “clearly set forth a definition of the disputed claim term other than its plain and ordinary meaning” and must clearly express an intent to redefine the term. *Thorner*, 669 F.3d at 1365. To disavow part of the plain and ordinary meaning, the patent must include a “clear and unmistakable disclaimer” that the invention does not include a particular feature. *Id.*, at 1367. A patentee’s use of the term “the invention” or “the present invention”—as opposed to “an embodiment of the invention”—may constitute a disavowal of claim scope. *See Hill-Rom Servs.*, 755 F.3d at 1372. But it does not if, for example, the references of the present invention are not uniform or if “other portions of the intrinsic evidence do not support applying the limitation to the entire patent.” *Cont’l Cirs. LLC v. Intel Corp.*, 915 F.3d 788, 798 (Fed. Cir. 2019).

To find the meaning of the claims, either its “ordinary and customary meaning” or patent-specific meaning, the court considers a hierarchy of evidence. *Phillips*, 415 F.3d at 1314. Most persuasive is the intrinsic evidence: the language of the claims, the specification, and the prosecution history. *Id.* In particular, the specification “is the single best guide to the meaning of a disputed term” and is typically dispositive in claim construction. *Id.*, at 1315. But extrinsic evidence such as expert testimony and dictionary definitions are also useful, so long as it does not contradict any claim meaning that is unambiguous in light of the intrinsic evidence. *Id.*, at 1318.

In analyzing the specification, courts consider the disclosed embodiments of the claimed invention. Generally, the patent claims should be construed to encompass preferred embodiments described in the specification, and it is generally error to adopt a construction that excludes them. *See On-Line Techs., Inc. v. Bodenseewerk Perkin-Elmer GmbH*, 386 F.3d 1133, 1138 (Fed. Cir. 2004). The mere fact of a particular embodiment

being taught (or even “preferred”) is generally not sufficient to justify limiting an otherwise broad claim scope to the particular embodiment taught. *See, e.g., GE Lighting Sols., LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1310 (Fed. Cir. 2014). But as an outer bound, the specification itself can exclude certain embodiments without needing to concede that those embodiments are “‘infeasible’ or even ‘impossible’[.]” *Techtronic Indus. Co. v. Int’l Trade Comm’n*, 944 F.3d 901, 909 (Fed. Cir. 2019).

2. “organic liquid solvating system”

The first term to be constructed is “organic liquid solvating system,” which appears in claims 1 and 9 of the ’306 Patent. In relevant part, these claims boil down to a composition or a fertilizer granule that comprises “one or more nitrification inhibitors in an organic liquid solvating system comprising a mixture of aprotic solvents and protic solvents” that are subject to many further limitations. ’306 Patent, claims 1 and 9. For the following reasons, the Court construes “organic liquid solvating system” as “a liquid mixture of aprotic solvents and protic solvents, each containing carbon, where either or both the aprotic solvents and protic solvents dissolve one or more nitrification inhibitors.”

| Term/Phrase | Defendants’ Proposal | Plaintiffs’ Proposal |
|-----------------------------------|---|--|
| “Organic Liquid Solvating System” | Plain and ordinary meaning OR “liquid composition that contains carbon” | “a mixture of aprotic and protic solvents where the mixture dissolves a solute, in this instance the nitrification inhibitors” |

Under defendants’ proposal, claims 1 and 9 would read on any mixture of nitrification inhibitor, aprotic solvent, and protic solvent, no matter the order of mixing. But under plaintiffs’ proposal, these claims would only read on mixtures where the aprotic and protic solvents were mixed together before adding the nitrification inhibitor. If adopted, these claims would not read upon a mixture where the nitrification inhibitor was

dissolved in only one of the solvents before adding the other solvent.

For the following reasons, the Court declines to adopt either construction, and instead construes “organic liquid solvating system” as “a liquid mixture of aprotic solvents and protic solvents, each containing carbon, where either or both the aprotic solvents and protic solvents dissolve one or more nitrification inhibitors.”

As a preliminary matter, organic and liquid are both known by lay people and people of ordinary skill in the art. The Court finds that the term “liquid” has a plain and ordinary meaning to lay people of “being in the liquid state,” and the specification does not show anything to contradict that meaning. The Court also finds that the term “organic” has a specific plain and ordinary meaning to a person of ordinary skill in the chemical arts—the term “organic” means “to contain carbon.” Extrinsic evidence of this definition comes from the IUPAC Blue Book: Chapter P-1 recites that “for nomenclature purposes, a structure containing at least one carbon atom is considered to be an organic compound.” INT’L UNION OF PURE AND APPLIED CHEMISTRY, NOMENCLATURE OF ORGANIC CHEMISTRY: CHAPTER P-1, P-10 INTRODUCTION, available at <https://iupac.qmul.ac.uk/BlueBook/P1.html>.

But that does not answer the whole inquiry. As noted above, the Court may adopt its own construction and need not adopt either party’s construction in full. *Homeland Housewares*, 865 F.3d at 1376. Here, the Court will start its analysis from the proposed constructions.

First, both claims 1 and 9 are directed to compositions of matter.⁷ That increases the burden required to follow plaintiffs’ construction that “the mixture [of aprotic and

⁷ The term “composition of matter” includes “all compositions of two or more substances” and “all composite articles, whether they be the results of chemical union, or of mechanical *mixture*, or whether they be gases, fluids, powders or solids.” *Diamond v. Chakrabarty*, 447 U.S. 303, 308 (1980) (quotations omitted and emphasis added).

protic solvents] dissolves a solute[,]" which would import the process step of mixing the aprotic and protic solvent before dissolving the solute. Under precedent, composition claims are not usually limited to compositions made by a specific process, *Vanguard Prods. Corp. v. Parker Hannifin Corp.*, 234 F.3d 1370, 1372–73 (Fed. Cir. 2000), because the claimed composition exists at the moment that each of the claimed ingredients are present in the amounts specifically claimed. *Exxon Chem. Pats., Inc. v. Lubrizol Corp.*, 64 F.3d 1553, 1558 (Fed. Cir. 1995). But, a composition claim can read on only compositions made by specific process steps if the patentee makes it clear that those process steps “are *an essential part* of the claimed invention.” *Andersen Corp. v. Fiber Composites, LLC*, 474 F.3d 1361, 1375 (Fed. Cir. 2007) (emphasis added); *see also Cont’l Cirs.*, 915 F.3d at 799 (quoting *Andersen Corp.*).

Here, to determine that the composition claim requires the process step of mixing the aprotic and protic solvents before dissolving the nitrification inhibitor, the Court must find evidence that this step is *essential* to the claimed invention. *See Cont’l Cirs.*, 915 F.3d at 799. In terms of claim construction, the Court must find evidence that a person of ordinary skill in the art who read the patent, specification, and prosecution history would interpret “organic liquid solvating system” so that mixing the aprotic solvents and protic solvents before dissolving a solute is an *essential* part of the invention. If that is not true, then the Court must find evidence of lexicography: that the patentee defined that term so that the system arises out of mixing the solvents, and then dissolving a solute in that mixture. Alternatively, the Court must find evidence of disavowal: that the patentee clearly disavowed any embodiments where the aprotic and protic solvents were not in a mixture before either dissolved the solute. For the reasons that follow, the Court finds no evidence that this mixing step is essential to the claimed invention, that the patentee defined “organic liquid solvating system” to require this mixing step, or that the patentee clearly disavowed this mixing step.

a. Claim Language

First, the Court examines the claim language for claims 1 and 9 for their use of “organic liquid solvating system.”

Claim 1, in relevant part:

A composition comprising one or more nitrification inhibitors in an *organic liquid solvating system* comprising a mixture of aprotic solvents and protic solvents [listing specific aprotic and protic solvents] wherein the organic liquid solvating system meets the following criteria: . . . able to provide improved and even application to fertilizer granules of nitrification inhibitors[.] ’306 Patent col. 20 l. 65–67; col. 21, l. 1–28 (emphasis added).

Claim 9, in relevant part:

A fertilizer granule or liquid additive, which comprises one or more nitrification inhibitors in an *organic liquid solvating system* comprising a mixture of aprotic and protic solvents [listing specific aprotic and protic solvents] wherein the organo⁸ liquid solvating system meets the following criteria: . . . able to provide improved and even application to fertilizer granules of nitrification inhibitors[.] ’306 Patent col. 22 l. 11–43 (emphasis added).

Both claims describe one or more nitrification inhibitors “in” an organic liquid solvating system. In both claims, the organic liquid solvating system includes an aprotic solvent and a protic solvent. Thus, the claims only apply against compositions that include an aprotic solvent, a protic solvent, and a nitrification inhibitor. *See Exxon Chem. Pats.*, 64 F.3d at 1558 (holding that the claimed composition exists at the moment that each of the claimed ingredients are present in the amounts specifically claimed).

And in both claims, the organic liquid solvating system must be “able to provide improved and even application to fertilizer granules of *nitrification inhibitors*.”⁹ ’306

⁸ The Court handles this typo in the next section.

⁹ The Court addresses the “organic”/“organo” disparity in the next section.

Patent col. 20 l. 65–67; col. 21 l. 1–32; col. 22 l. 11–48. (emphasis added). In other words, the mixture of aprotic and protic solvents must be able to provide the property of “improved and even application” to a nitrification inhibitor. This limitation is certainly satisfied by mixing the aprotic and protic solvent before applying them to the nitrification inhibitor. But it is also satisfied by mixing one solvent with the nitrification inhibitor, and then mixing in the other solvent, so long as the nitrification inhibitor gains the property of “improved and even application.” Thus, claims 1 and 9 do not themselves show that the aprotic and protic solvents must be in a mixture *before* providing improved and even application to the nitrification inhibitor.¹⁰

b. Specification

The Court finds that the specification contemplates examples of the organic liquid solvating system where either solvent dissolves a solute before forming a mixture with the other solvent.

To be clear, there are embodiments in the specification where the nitrification inhibitor is dissolved into a pre-existing mixture of an aprotic solvent and a protic solvent. The specification discloses an embodiment where the nitrification inhibitor (“DCD”) is added to the *combined* aprotic solvent (“DMSO”) and protic solvent (propylene glycol). ’306 Patent col. 6, l.34–35; col. 7 l. 1–3.

But the rest of the specification shows that the aprotic and protic solvents need not be mixed before dissolving the nitrification inhibitor. Several embodiments disclosed in the specification show only that the nitrification inhibitor is “present” in a mixture of an aprotic and a protic solvent. *See, e.g.*, ’306 col. 7 l. 58–67. The specification also

¹⁰ Separately and persuasively, other claims in the ’306 Patent, such as the unchallenged claim 13, are method claims that dictate how to make this composition. And although claim 13 claims a method of making a composition to be added to a fertilizer, it dictates the same language concerning “organic liquid solvating system” and does not indicate in what order to make that system. *See* ’306 Patent, claim 13.

discloses an embodiment where a nitrification inhibitor (“DCD”) can be dissolved in a suitable solvent, which suggests that the nitrification inhibitor need not be dissolved in a mixture of solvents. *Id.*, at col. 3 l. 35–38. It also discloses an embodiment where the nitrification inhibitor (DCD) is dissolved “into an aprotic solvent” (for example, DMSO) and then “mixed with protic component(s).” *Id.*, at col. 5 l. 28, 37. Several listed Examples disclose an aprotic solvent (such as dimethyl sulfoxide) dissolving a nitrification inhibitor (such as dicyandiamide) before receiving the protic solvent (tripropylene glycol methyl ether). *Id.*, at cols. 9–10. Another example features a protic solvent (tripropylene glycol methyl ether) dissolving the nitrification inhibitor (dicyandiamide). *Id.*, at col. 11 l. 38–44.

The specification does not contain any lexicography or disavowal. The Court does not find that the patentee clearly set forth a definition of “organic liquid solvating system” that expressly required the aprotic and protic solvents to be in mixture before dissolving the solute. *See Thorner*, 669 F.3d at 1365. There is no clear definition in the record. Nor does the Court find disavowal in the intrinsic record that the invention does not include any cases where either the aprotic solvent or protic solvent dissolve the solute before adding the other solvent. The intrinsic record must make “clear and unmistakable limiting statements” to that fact. *Cont’l Cirs.*, 915 F.3d at 798.

Plaintiffs’ cited “present invention” language does not support a finding of disavowal of any compositions where the aprotic and protic solvents are not mixed together before dissolving the solute. (Doc. 94, at 10). “Present invention” language may, but does not always, provide this evidence of disavowal especially if “other portions of the intrinsic evidence do not support applying the limitation to the entire patent.” *Cont’l Cirs.*, 915 F.3d at 798 (quotation omitted). The specific language plaintiffs point

to tells that the present invention is based on “improved solvent formulations”¹¹ that are “used to solubilize”¹² one or more nitrification inhibitors.” ’306 Patent, col. 4 l. 57–60. This language makes it unmistakably clear that either or both of the aprotic and protic solvents must dissolve a nitrification inhibitor. But it is not unmistakably clear that the solvent formulations must include a mixture of aprotic solvents and protic solvents *before* it solubilizes the nitrification inhibitor. Thus, the Court declines plaintiffs’ invitation to read this language as a disavowal in favor of its claim construction. (Doc. 94, at 10). Neither does the Court read a disavowal in the abstract’s language that “the nitrification inhibitors are present in a mixture that comprises both a protic and an aprotic solvent system.” ’306 Patent, Abstract. Again, this statement only tells that the nitrification inhibitors are present in the mixture, not that the aprotic and protic solvent formed the mixture before dissolving the nitrification inhibitor.

Furthermore, even if the Court read the uses of “present above” in plaintiffs’ favor, the specification provides competing uses of “present invention” when it lists its Examples as “certain embodiments of the present invention.” ’306 Patent col. 9 at l. 46–47. As set out before, in some of these “certain embodiments of the present invention,” the aprotic solvent dissolved the nitrification inhibitor, before the protic solvent was introduced to the mixture. *See, e.g., id.*, at col. 9–10. Thus, the specification does not make an “unmistakably clear” showing that the “present invention” did not include systems where the solvents were not in mixture before dissolving the nitrification inhibitor.

c. Prosecution History

Similarly, the Court does not find any unmistakably clear disclaimers of those

¹¹ A common synonym for mixture.

¹² It is undisputed that “solubilize” is equivalent to “dissolves.”

systems in the prosecution history in this record—specifically in patentee’s response to the double patenting rejection and the Section 102/103 rejections. (Doc. 94-3).

Patentee’s response to the double patenting rejection does not amount to a disavowal of mixtures where either solvent dissolved the nitrification inhibitor before being mixed with the other solvent. (Doc. 94-3, at 6). The examiner found the claims unpatentable over claims of a different pending application on the grounds of double patenting. (*Id.*). In short, the examiner asserted that the patentee was attempting to claim the same invention in different patents. (*Id.*). The patentee resisted this double patenting rejection by identifying two differences from the reference patent application. (*Id.*). First, that the present invention related solely to nitrification inhibitors while the other patent application related to nitrification inhibitors and urease inhibitors. (*Id.*). Second, that the other patent application did not disclose the protic solvents claimed in the ’306 Patent. (*Id.*) The Court finds that neither of these distinctions amount to a disavowal of organic liquid solvating systems where either solvent dissolves the nitrification inhibitor before the other solvent is added to the mixture.

Patentee’s response to the Section 102/103 rejections in view of McKnight also does not amount to a disavowal of mixtures where either solvent dissolved the nitrification inhibitor before receiving the other solvent. (Doc. 94-3, at 4). The McKnight reference included a mixture of nitrification inhibitors and aprotic solvents, but no protic solvents. (*Id.*). The patent examiner rejected the claims because they were not “novel” or “nonobvious” in light of the McKnight reference. *Id.* The patentee then asserted that “the present invention relates to and claims a solvent system” designed “solely for one or more nitrification inhibitors.” (*Id.*).

It also stated that the “solvent system comprises a mixture of one or more protic solvents and one or more aprotic solvents.” (*Id.*). The Court finds that patentee distinguished from McKnight on the ground that the ’306 Patent claimed a composition

with a nitrification inhibitor and both aprotic and protic solvents. Patentee said nothing about the order in which the protic solvent, aprotic solvent, and nitrification inhibitor entered the mixture. Thus, it is not unmistakably clear that patentee disavowed products where the one solvent dissolved the nitrification inhibitor before the other solvent was introduced.

The parties' citation to *GlaxoSmithKline LLC v. Banner Pharmacaps, Inc.*, does not help their cases. 744 F.3d 725, 729 (Fed. Cir. 2014). Defendants asserted that the Federal Circuit rejected the argument that "solvate" should be construed to require a specific function or result. (Doc. 95, at 13). Plaintiffs in turn argue that that case supports their proposed construction. (Doc. 97, at 7). But, the *GlaxoSmithKline* Court did not hold that "solvate" could not be construed to require a specific function or result. 744 F.3d at 729. Instead, it asserted that under either party's construction, the claim term "solvate" did not refer to "what the molecule does" and did not need to "perform an identified function or produce an identified result." *Id.*, at 729. Thus, the *GlaxoSmithKline* Court did not furnish a definition of "solvate" that affects that term's construction in the '306 Patent.

d. Dictionary Definitions

The Court turns to the parties' dictionary definitions of the word "solvating." Plaintiffs offers the MCGRAW-Hill DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS, which defines "solvation" as "[t]he process of swelling, gelling, or dissolving of a material by a solvent." (Doc. 94-4, at 5). Defendants offer the *Merriam Webster Dictionary*, Online Edition, which defines "solvating" as "to make part of a solvate." (Doc. 97, at 9). The Court can find from this support that a solvent must dissolve the nitrification inhibitor. As noted above, it does not follow from this that the two or more solvents must mix together before dissolving the nitrification inhibitor.

In sum, the Court disagrees with both parties' claim constructions. Defendants'

claim construction—an organic liquid solvating system is a “liquid composition that contains carbon”—is too broad in light of the specification and prosecution history’s focus on dissolving nitrification inhibitors. Plaintiffs’ claim construction—an organic liquid solvating system is a “mixture of aprotic and protic solvents where the mixture dissolves a solute, in this instance the nitrification inhibitors”—is too narrow in light of the intrinsic and extrinsic evidence’s lack of requirement that the aprotic and protic solvent be in a mixture before dissolving a solute.

Thus, the Court construes the term “organic liquid solvating system” as “a liquid mixture of aprotic solvents and protic solvents, each containing carbon, where either or both the aprotic solvents and protic solvents dissolve one or more nitrification inhibitors.”

3. *“the organo liquid solvating system”*

The next dispute is over the term “organo liquid solvating system” which appears in claim 9. In relevant part, claim 9 claims a fertilizer granule or liquid additive that comprises one or more nitrification inhibitors in an “organic liquid solvating system,” and then later recites that “the organo liquid solvating system” meets several criteria. ’306 Patent col. 22 l. 36. Notably, after this lawsuit began, the USPTO Certificate of Correction changed “organo” to “organic.” (Doc. 94, at 12). For the following reasons, the Court exercises its own power to correct “organo” to “organic,” and then construes these remaining uses of “organic liquid solvating system” as it has for the above term: “a liquid mixture of aprotic solvents and protic solvents, each containing carbon, where either or both the aprotic solvents and protic solvents dissolve one or more nitrification inhibitors.”

| Term/Phrase | Defendants' Proposal | Plaintiffs' Proposal |
|---|--|--|
| "Organic Liquid [sic] Solvating System" | Plain and ordinary meaning of "organic liquid solvating system" OR "liquid composition that contains carbon" | Indefinite OR "a mixture of aprotic and protic solvents where the mixture dissolves a solute, in this instance the nitrification inhibitors" |

Plaintiffs assert that the term "the organo liquid solvating system" should be rejected as indefinite, because it does not have "proper antecedent basis." (Doc. 94, at 11 (citing *Halliburton Energy Servs., Inc. v. M-1 LLC*, 514 F.3d 1244, 1249 (Fed. Cir. 2008))). That is, the term "organo" appears for the first time preceded by "the," not "a." Plaintiffs assert that the interchanged and unexplained use of "organic" and "organo" creates confusion, and that the USPTO Certificate of Correction cannot resolve this confusion as it does not apply to this dispute. (Doc. 94, at 12). In the alternative, plaintiffs request the same construction for "organo" as it requested for "organic." Defendants in turn claim that "organo" is a typo for "organic," that the Court can correct this typo on its own initiative, and that the typo does not render the claim indefinite. (Doc. 95, at 14). For the following reasons, the Court finds that "organo" is a typo, and then corrects this typo and construes "organo" as "organic."

The Court cannot consider the certificate of correction replacing "organo" with "organic." (Doc. 94-6). Although the USPTO can issue corrections for "mistake[s] of a clerical or typographical nature" that do not "constitute new matter," Title 35, United States Code, Section 255, such a correction only takes effect for causes of action arising after the certificate of correction. *Id.* (limiting correction's effect to "causes thereafter arising"); *Southwest Software v. Harlequin*, 226 F.3d 1280, 1296 (Fed. Cir. 2000). Because this infringement cause of action arose before the certificate of correction, the

certificate of correction does not apply to this dispute.

Still, a district court can independently correct a patent “if (1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification and (2) the prosecution history does not suggest a different interpretation of the claims.” *Novo Indus., L.P. v. Micro Molds Corp.*, 350 F.3d 1348, 1357 (Fed. Cir. 2003). An error apparent on the face of the patent can be corrected. *Grp. One, Ltd. v. Hallmark Cards, Inc.*, 407 F.3d 1297, 1303 (Fed. Cir. 2005). But errors are judged from the point of view of one of ordinary skill in the art. *See Ultimex Cement Mfg. Corp. v. CTS Cement Mfg. Corp.*, 587 F.3d 1339, 1353 (Fed. Cir. 2009)

To one of ordinary skill in the art, that “organo” is a typo is apparent on the face of the patent. The claim language of claim 9 first discusses “an organic liquid solvating system” and then discusses the characteristics of “the organo liquid solvating system” without explanation. ’306 Patent col. 22 l. 11–36. The unchallenged claim 13 does the same. *Id.*, at col. 23 l. 3–29.

The specification shows overlap between use of the term “organo” and “organic.” The word “organo” appears in the following phrases: “organo solvent component,” *id.*, at col. 13 l. 63–67; “organo liquid solvating system,” *id.*, at col. 19 l. 48; “organo-liquids,” *id.*, at col. 4 l. 8, 13; “organo-liquid ingredients,” *id.*, at col. 3 l. 62; and “organo-liquid delivery system,” *id.*, at col. 4 l. 24. In turn, the specification describes an “organic liquid solvating system,” *id.*, at col.19 l. 24 (while describing the same embodiment as the “organo liquid solvating system,” *id.*, at col.19 l. 48); “organic liquids,” *id.*, at col. 7 l. 4; and “organic liquid dispersing system,” *id.*, at col.6 l. 55–56. The specification does not disclose an “organic solvent component,” “organic liquid ingredients,” or “organic liquid delivery system.” “[O]rgano-liquid ingredients” appears only once, *id.*, at col. 3 l. 62, and the Court reads “dispersing” as a synonym for “delivery.” These differences are not sufficiently persuasive for the Court to find a

distinction between “organo” and “organic.”

The provided prosecution history does not focus on the use of “organo” or “organic” at all.

In sum, the Court does not find that a person of ordinary skill in the art would be confused by the use of “organo.” Given this overlap and the lack of a clear distinction, the Court finds that the correction of “organo” and “organic” is not subject to reasonable debate based on consideration of the claim language and the specification and the prosecution. Thus, it exercises its own power to correct that typo. As a result, the Court construes all instances of “organo liquid solvating system” as “organic liquid solvating system.” Then it follows the construction that it laid out for “organic liquid solvating system.”

4. “solvent” or “solvents”

Parties next dispute the term “solvent” or “solvents.” Claim 1 recites in part that the composition includes “aprotic solvents and protic solvents,” ’306 Patent col. 20 l. 65, and identifies specific “aprotic solvents” and “protic solvents.” *Id.*, at col. 21 l. 1–20. Claim 9 tracks claim 1. *Id.*, at col. 22. And the claims dependent to claim 1 identify specific aprotic and protic solvents, sometimes in specific amounts. *Id.*, at col. 21. For the following reasons, the Court construes the term “solvent” as “a substance capable of dissolving a solute.”

| Term/Phrase | Defendants’ Proposal | Plaintiffs’ Proposal |
|-------------------------|---|--|
| “solvent” or “solvents” | Plain and ordinary meaning OR “the component[s] of a solution that defines its phase” | “a substance that dissolves a solute, in this instance the nitrification inhibitors” |

As a preliminary matter, the Court rejects plaintiffs’ proposed construction of solvent as “a substance that dissolves a solute, in this instance the nitrification inhibitors,”

for the same or similar reasons that the Court rejected plaintiffs’ construction of “organic liquid solvating system.” Under plaintiffs’ construction, these claims would read only on compositions where *each* solvent in the mixture, whether protic or aprotic, dissolved the nitrification inhibitor.

By requiring both solvents to dissolve the solute, this construction excludes existing embodiments where one solvent does not dissolve the solute. The specification discloses an embodiment where a nitrification inhibitor (DCD) can be “dissolved in a suitable solvent[,]” which suggests that the nitrification inhibitor need not be dissolved by both solvents. *Id.*, at col. 3 l. 35–38 (emphasis added). The specification discloses an embodiment where a protic solvent (tripropylene glycol methyl ether) dissolves the nitrification inhibitor (dicyandiamide). *Id.*, at col. 11 l. 38–42.

This construction assumes that both solvents are present before adding that nitrification inhibitor. As the Court noted above when construing “organic liquid solvating system,” this excludes many embodiments, and there is no evidence in the patent specification or prosecution history for a disavowal or for lexicography on this ground. The Court rejected plaintiffs’ construction of “organic liquid solvating system” for that reason, and those reasons apply here.

The patent specifically claims several solvents. Claim 1 specifically sets out specific compositions of aprotic solvents and specific compositions of protic solvents, as does claim 9. Most relevantly, a solvent must be either aprotic or protic—there is no other kind.¹³ It follows that a list of claimed aprotic solvents and protic solvents would together form a list of claimed “solvents.” Thus, the plain and ordinary meaning of

¹³ For context, a protic solvent includes a hydrogen atom bound to an electronegative atom (for example, oxygen) and easily donates that hydrogen atom in chemical reactions. An aprotic solvent, in contrast, does not have a hydrogen atom that it can donate. Most importantly for sake of this claim construction is that “aprotic solvent” and “protic solvent” are the only possible solvents.

solvents should at least embrace the solvents claimed in claim 1 and 9.¹⁴

The specification suggests that the ordinary and customary meaning of “solvent” is a substance that can dissolve a solute but need not do so. For example, the protic solvent propylene glycol can dissolve the nitrification inhibitor thiourea. ’306 Patent col. 12 l. 28–31. In another embodiment, that same protic solvent can be added to the composition *after* the aprotic solvent dimethyl sulfoxide dissolves dicyandamide, and thus would not dissolve dicyandamide. *Id.*, at col. 12 l. 16–23. The Court does not find any evidence that every solvent must dissolve the solute, let alone evidence sufficient to meet the “exacting standard” of lexicography or disavowal. So, it will not adopt a construction limiting solvents to those that dissolve the solute, because that would exclude the embodiments that use solvents in other manners. Thus, the Court finds that a solvent in this patent means “a substance that can dissolve a solute.”

The Court does not adopt plaintiffs’ other proposed definition, that the solvent “define the phase.” That definition is technically true. (*See* Doc. 95-3, at 4 (referencing OLMSTED & WILLIAMS, CHEMISTRY: THE MOLECULAR SCIENCE G-10 (1994) (defining “solvent” as “[t]he component of a solution that defines its phase”))). But the intrinsic evidence does not discuss any “phase.” It does, however, discuss what substances dissolve which solutes.

In sum, the Court construes solvent to mean “a substance that can dissolve a

¹⁴ Specifically, dimethyl sulfoxide, dialkyl sulfoxide, diaryl sulfoxide, or an alkylaryl sulfoxide having the formula $R_1-S(O)-R_2$, wherein R_1 is methyl, ethyl, n-propyl, phenyl or benzyl and R_2 is ethyl, n-propyl, phenyl or benzyl; and a) an alcohol or polyol from the family of alkylene and poly(alkylene) glycols, b) an alkylene glycol selected from the group consisting of ethylene, propylene, and butylene glycol, c) glycerin, d) an alkylene glycol alkyl ether selected from the group comprising of dipropylene glycol methyl ether, tripropylene glycol methyl ether, and tripropylene glycol butyl ether and e) ethyl, propyl, or butyl lactate. ’306 Patent claim 1, 9.

solute.”¹⁵

5. “environmentally safe”

The parties next dispute the construction of the term “environmentally safe.” In short, claims 1 and 9 require that the organic liquid solvating system is “environmentally safe.” ’306 Patent col. 21 l. 23; *id.*, at col. 22 l. 38. For the following reasons, the Court adopts the ordinary and customary meaning: “not harmful to the environment.”

| Term/Phrase | Defendants’ Proposal | Plaintiffs’ Proposal |
|------------------------|--|----------------------------|
| “environmentally safe” | Plain and ordinary meaning OR “Aquatic Toxicity Hazard Concern Level of Low or Moderate” | “environmentally friendly” |

The term “environmentally safe” appears without further elaboration in the claims and in embodiments of the specification. For example, the specification repeatedly states that the organic liquid solvating system must be “environmentally safe.” *See, e.g.*, ’306 Patent col. 3 l. 64; *id.*, at col. 5 l. 7; *id.*, at col. 14 l. 40. The background of the invention states that it is advantageous to the industry to find delivery formulations that are “safe for the environment.” *Id.*, at col. 2 l. 24. Embodiments also evidence this quality. One embodiment discloses that the compositions of the present invention attempted to emphasize “environmental safety.” *Id.*, at col. 15 l. 5. And another embodiment includes formulations that are “more environmentally friendly.” *Id.*, at col. 3 l. 44.

The Court rejects plaintiffs’ proposal to construe “environmentally safe” as

¹⁵ Because the Court imposes its own construction, not defendants’, it does not reach plaintiffs’ argument that any ambiguity must be construed against the patent holder in light of fair notice. (Doc. 97, at 11) (quoting *Athletic Alternatives, Inc. v. Prince Mfg., Inc.*, 73 F.3d 1573, 1581 (Fed. Cir. 1996)).

“environmentally friendly,” as that would exclude the above embodiments that are “environmentally safe” or “safe for the environment” in favor of an embodiment that appears only once in the specification. The Court sees no reason in the specification or prosecution history, whether by lexicography or disavowal, to adopt that term.

At its broadest, the person of ordinary skill in the art would consider “environmentally safe” to mean “not harmful to the environment.” The Court will not limit the environments protected to those discussed in the specification, even though a person of ordinary skill in the agricultural arts would differentiate between different environments because that would import limitations from the specification into the claim term. The specification limits discussion of environmental harms to the risk of water and air pollution. For example, “[w]hen rain or water run-off contacts the soil, the nitrogen or nitrogen containing compounds may be carried with the water to surrounding waterways.” *Id.*, at col. 1 l. 44–46. “[T]he loss of nitrogen from the soil results not only in water pollution but also atmospheric pollution.” *Id.*, at col. 1 l. 59–60. Increasing the life expectancy of nitrogen in soil “limit[s] the amount of nitrogen carried into the waterways.” *Id.*, at col. 2 l. 1. 19. Nitrogen run-off has fueled “the Gulf Dead Zone, the formation of toxic algal blooms as well as damage to drinking water supplies.” *Id.*, at col. 2 l. 20–25. “Environmental safety may be emphasized if the formulations of the present invention are to be used where any potential run-off of the formulation is to be used near a drinking source.” *Id.*, at col. 14 l. 64–67. And the treated fertilizer would assist “in controlling pollution of our water and atmosphere.” *Id.*, at col. 2 l. 32.

The Court declines to adopt defendants’ proposed “Aquatic Toxicity Rating” construction because that would impermissibly read a limitation into the claim. The specification disclosed Table 2, which evaluated Examples 1-21 in the specification on an Aquatic Toxicity Rating. *Id.*, at col. 13 l. 37–59. Table 2 labeled each example as either “Low” to “Medium.” *Id.* The specification also states that “from the above table

2,” a combination of factors produces a solvent system that provides or gives a solution that includes at least one of the following [properties]: . . . environmentally safe[.]” *Id.*, at col. 14 l. 35–40. The Court could infer from these statements that a composition is environmentally safe if it has either a “Low” or “Medium” Aquatic Toxicity Rating. But all that the specification discloses is that certain embodiments have a rating of Low and others a rating of Medium. It does not disclose an Aquatic Toxicity Rating for every possible composition claimed, nor does it disclose how to measure this rating for embodiments other than Examples 1-21. Thus, adopting the “Aquatic Toxicity Rating” construction would impermissibly read a limitation into the claim that the composition “have an Aquatic Toxicity Rating” at all.

Thus, the Court will adopt the ordinary and customary meaning of “environmentally safe”—“not harmful to the environment.”

6. “*inherently rated safe for contact with humans and animals*”

The parties dispute the meaning of the term “inherently rated safe for contact with humans and animals.” In relevant part, claims 1 and 9 require that the organic liquid solvating system be “inherently rated safe for contact with humans and animals.” For the following reasons, the Court adopts defendants’ proposal construction of having a “Human Health Rating of 2 or less based on HMIS rating.”

| Term/Phrase | Defendants’ Proposal | Plaintiffs’ Proposal |
|---|---|--|
| “inherently rated safe for contact with humans and animals” | Plain and ordinary meaning OR “Human Health Rating of 2 or less based on HMIS rating” | “a composition that could be handled safely by both humans and/or animals” |

The claims do not clarify the definition of “inherently rated safe for contact with humans and animals.” Turning to the specification, this term appears six times without further elaboration. ’306 Patent col. 3 l. 66–67; *id.*, at col. 5 l. 11–12; *id.*, at col. 14 l.

42–43; *id.*, at col. 17 l. 56–57; *id.*, at col. 18 l. 56–57; *id.*, at col. 19 l. 52–53.

The specification gestures towards the concept of safety in other embodiments but does not mention any “rate.” “In one embodiment, this invention proposes formulations of mixtures containing aprotic and protic solvents which are more environmentally friendly and *are safe for workers to handle.*” ’306 Patent col. 3 l. 45 (emphasis added). “[T]he compositions of the present invention attempted to emphasize solubility, environmental safety, a low freeze chill point, a high flash point, and a composition that *could be handled safely by both humans and/or animals.*” *Id.*, at col. 15 l. 4–7. The Abstract provides that the formulations “provide an environmentally sound and inherently safe solvating system” and “enable safe storage, transport and subsequent application.” But these descriptions do not appear in the claims.

The specification also discloses a “rate” for safety in table 2, which assigns a “Human Health Rating” to Examples 1–21, *Id.*, at col. 13 l. 39–59, and describes that rating as based on the “HMIS (Hazardous Materials Information System) rating on Health of any organo solvent component >2%.” *Id.*, at col 13 l. 61–63.

The Court declines to adopt plaintiffs’ proposal of “a composition that could be handled safely by both humans and/or animals,” because it conflicts with the claims. The claims themselves require that the system is “inherently *rated* safe for contact,” not that the system *is* inherently safe. *Id.*, at col. 21 l. 25. Plaintiffs’ proposal thus conflicts with the language of the claim by expanding the claim to protect compositions that are not “rated” safe for contact.

The Court instead will adopt defendants’ proposal of a “Human Health Rating of 2 or less based on HMIS rating.” A person of ordinary skill who reads the claim term “inherently rated safe for contact with humans and animals” would reasonably infer that safety is judged by an external metric. The specification furnishes this external metric in Table 2. *Id.*, at col 13 l. 61. Unlike the “environmentally safe” term, where construing

the claim term in light of a rating would improperly import limitations into the claim, the claim term here already includes the limitation of a rating system. And, further unlike the “environmentally safe” term, the term “Human Health Rating” is derived from and appears to use the same units as the Hazardous Materials Information System (HMIS). Thus, the Court finds that the ordinary and customary meaning of “inherently rated safe for contact with humans and animals” means having a “Human Health Rating of 2 or less based on HMIS rating.”

7. “an alcohol or polyol from the family of alkylene and poly(alkylene) glycols”

The parties dispute the meaning of “an alcohol or polyol from the family of alkylene and poly(alkylene) glycols.” In relevant part, claims 1 and 9 recite that the protic solvent in the composition is one or more members selected from the group consisting of “an alcohol or polyol from the family of alkylene and poly(alkylene) glycols” and other substances. ’306 Patent col. 21 l. 10–11.

| Term/Phrase | Defendants’ Proposal | Plaintiffs’ Proposal |
|---|---|--|
| “an alcohol or polyol from the family of alkylene and poly(alkylene) glycols” | Plain and ordinary meaning OR “an alcohol or polyol from the family of C ₁₋₁₀ alkynols and poly(C ₁₋₁₀ alkylene) glycols” | Plain and ordinary meaning in context of the ’306 patent |

Though both parties ask for the “plain and ordinary meaning,” the key dispute is whether the “plain and ordinary meaning” of this term includes “polyethylene glycol.” Defendants alleged that the Accused Products infringed claims 1 and 9 in part because they contained “polyethylene glycol.” (Doc. 95, at 20–21). Plaintiffs asserted in their resistance to defendant Eco World’s motion for leave to amend its answer to assert counterclaim (Doc. 58) that the Accused Products’ containing polyethylene glycol does

not infringe claims 1 and 9, because the claims do not recite that term: implicitly, plaintiffs appear to argue that the claim term “an alcohol or polyol from the family of alkylene and poly(alkylene) glycols” does not read upon polyethylene glycol. (*Id.*, at 5).

The Court rejects defendants’ “C₁₋₁₀” construction. Although one embodiment discloses that the alcohol or polyol comes from the above “C₁₋₁₀” family, ’306 Patent col. 8 l. 39–40, other embodiments track the claim language and describe the alcohol or polyol as coming from “the family of alkylene and poly(alkylene) glycols.” *Id.*, at col. 17 l. 38–39. Thus, adopting defendants’ construction would impermissibly read a “C₁₋₁₀” limitation into the claim.

For the following reasons, however, the Court finds that the plain and ordinary meaning of the term includes “polyethylene glycol.” Claim 1 and 9 recite that an “alkylene glycol” can be selected from ethylene, propylene, and butylene glycol. *Id.*, at col. 21 l. 12; col. 22 l. 27. The specification or prosecution history do not describe ethylene glycol or polyethylene glycol. Turning to extrinsic evidence, the Court finds that “polyalkylene glycols” means “polyethylene glycols”: “polyalkylene glycols” is the common name for certain “ethylene oxide polymers” which in turn are also named “poly (ethylene glycols)[.]” *Matlock et al.*, POLYALKYLENE GLYCOLS 159, 161 (1999), available at <https://ptabdata.blob.core.windows.net/files/2016/PGR2016-00011/Exhibit-1118.pdf>. Thus, a polyalkylene glycol includes homopolymers and copolymers of poly (ethylene glycols). This definition does not conflict with anything in the intrinsic evidence. The Court thus finds that the “plain and ordinary meaning” of the term “an alcohol or polyol from the family of alkylene and poly(alkylene) glycols” includes polyethylene glycols.

E. Infringement Evidence Disputes

Having construed the claims above, the Court turns to the question of infringement. Plaintiffs move to exclude defendants’ evidence of infringement (Doc.

112) and then move for summary judgment of non-infringement. (Doc. 111). Defendants move for partial summary judgment of infringement. (Doc. 108).

The Court first considers plaintiffs' motion to exclude defendants' evidence of infringement (Docs. 112, 112-1) which replicate the arguments plaintiffs make in their motion for partial summary judgment (Doc. 111-1). Plaintiffs challenge three pieces of evidence: (1) an expert report from Dr. Bowden ("Bowden Expert Report") (Doc. 116-2, at 100-357); (2) post-report notes by Dr. Bowden (Doc. 111-6, at 259-66); and (3) a designation of Tim Ballard as a witness made after the deadline for expert designations. (Docs. 111-11, at 77, 81). For the following reasons, the Court **denies** plaintiffs' challenges to each piece of evidence.

1. Applicable Law

In patent law, a district court's decision to exclude evidence is governed under the law of the regional circuit. *Del. Valley Floral Grp., Inc. v. Shaw Rose Nets, LLC*, 597 F.3d 1374, 1379 (Fed. Cir. 2010). As the proponent of the expert testimony in question, plaintiffs have the burden to prove its admissibility by a preponderance of the evidence. *Lauzon v. Senco Prods., Inc.*, 270 F.3d 681, 686 (8th Cir. 2001).

"Federal Rule of Evidence 702 governs the admissibility of expert testimony, and under this rule the district court is vested with a gatekeeping function, ensuring that 'any and all scientific testimony or evidence admitted is not only relevant, but reliable.'" *In re Bair Hugger Forced Air Warming Devices Prod. Liab. Litig.*, 9 F.4th 768, 777 (8th Cir. 2021) (citation omitted). An expert opinion is admissible if: "[1] the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue; [2] the testimony is based on sufficient facts or data; [3] the testimony is the product of reliable principles and methods; and [4] the expert has reliably applied the principles and methods to the facts of the case." FED. R. EVID. 702. When determining the reliability of an expert's opinion, a court

examines the following four non-exclusive *Daubert* factors: (1) whether the expert's theory or technique "can be (and has been) tested"; (2) "whether the theory or technique has been subjected to peer review and publication"; (3) "the known or potential rate of error"; and (4) "general acceptance." *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 593–94, (1993). These factors are not exclusive or exhaustive, and the court may tailor its inquiry to fit the particular facts of a case. *Presley v. Lakewood Eng'g & Mfg. Co.*, 553 F.3d 638, 643 (8th Cir. 2009) (citations omitted).

It is part of a court's gatekeeping duty to "protect juries from being swayed by dubious scientific testimony." *In re Zurn Pex Plumbing Prods. Liab. Litig.*, 644 F.3d 604, 613 (8th Cir. 2011). The Eighth Circuit, however, has cautioned that the "rejection of expert testimony is the exception rather than the rule." *Johannessohn v. Polaris Indus., Inc.*, 450 F. Supp. 3d 931, 970 (D. Minn. 2020) (internal quotation marks omitted), *aff'd*, 9 F.4th 981 (8th Cir. 2021). So long as "the expert's scientific testimony rests upon 'good grounds, based on what is known' it should be tested by the adversary process with competing expert testimony and cross-examination, rather than excluded by the court at the outset." *Kirk v. Schaeffler Grp. USA, Inc.*, 887 F.3d 376, 391 (8th Cir. 2018) (quoting *Johnson v. Mead Johnson & Co.*, 754 F.3d 557, 562 (8th Cir. 2014)). For example, the Court can exclude an opinion formed by "vague theorizing and amorphous general principles" because that opinion does not assist the trier of facts. *Ackerman v. U-Park, Inc.*, 951 F.3d 929, 933 (8th Cir. 2020). "But [a] party's dispute with an expert's methodology or the facts or documents upon which the expert relied (or did not rely) does not result in exclusion of the expert's testimony." *Porters Building Centers, Inc. v. Sprint Lumber*, Case No. 16-06055-CV-SJ-ODS, 2017 WL 4364209, at *2 (W.D. Mo. Oct. 2, 2017). Instead, such concerns go to the weight of the evidence. *See id.*

In bench trials, however, "there is less need for the gatekeeper to keep the gate

when the gatekeeper is keeping the gate only for [them] self.” *Klossner v. IADU Table Mound MHP, LLC*, No. 20-CV-1037-CJW-KEM, 2021 WL 3439419, at *7 (N.D. Iowa Apr. 16, 2021). The usual concerns of the *Daubert* rule—keeping unreliable expert testimony from the jury—do not apply in such a setting. *In re Zurn Pex Plumbing Prod. Liab. Litig.*, 644 F.3d at 613. Nor do they apply when the matter is before the Court on a motion for summary judgment, because the Court acts as a fact-finder. Thus, the *Daubert* requirements are relaxed in bench trials and motions for summary judgment.

2. Bowden Expert Report

The Court first considers the Bowden Expert Report, which contains Dr. Bowden’s analysis and conclusions that the Accused Products infringe on claims 1–10 of the ’306 Patent. (Doc. 116-2, at 100–357). Plaintiffs assert that the Bowden Expert Report should be excluded because it relies on the EN-CAS rating system, which is purportedly based upon subjective methodologies and is not objectively verifiable or reliable (Docs. 111-1, at 12–14; 112-1, at 2–3), and purportedly fails other *Daubert* reliability requirements. (Doc. 111-1, at 16). Plaintiffs also assert that the Bowden Expert Report is unreliable because it offers inconsistent, “unsupported and contradictory definitions” about the terms chill-point and freeze-point. (*Id.*, at 26).

For the following reasons, the Court denies plaintiffs’ motion to exclude the Bowden Expert Report.

a. EN-CAS

As a preliminary matter, the Bowden Expert Report relied on more than just the EN-CAS rating test, as defendants note. (Doc. 131, at 9). The Bowden Expert Report explicitly relies on several sources: the patents themselves, the Microsource Accused Products and their technical documents, the Gavilon Products, the EN-CAS test results, several literature references, and discussions with Tim Ballard of EN-CAS and Dr. Parker. (Doc. 116-2, at 103–104). The discussion with Tim Ballard explained how to

perform the urea coating testing. (Doc. 131-3, at 16). Thus, even if the Court found that the EN-CAS rating test was subjective and unreliable, it would not exclude the entire Bowden Expert Report on that ground.

The Court will not exclude any portion of the Bowden Expert Report that relies on the EN-CAS system solely on the grounds that Dr. Bowden did not perform the test himself, nor that Dr. Bowden did not know what the method number of that test referred to, nor whether the test was done on more than one sample of the Accused Products, nor whether the test was compiled from more than one individual's rating at EN-CAS. (Doc. 111-1, at 14–15). Experts may rely on scientific test results prepared by others if such reliance is reasonable. FED. R. EVID. 703; *Monsanto Co. v. David*, 516 F.3d 1009, 1015 (Fed. Cir. 2008) (citing *Ratliff v. Schiber Truck Co.*, 150 F.3d 949, 955 (8th Cir. 1998)).

Here, the record does not show that experts in organic chemistry would not reasonably rely on the EN-CAS test results. Dr. Bowden testified that he spoke with Ballard about the testing procedure so that he “could be confident of the experiments that [Mr. Ballard] did.” (Doc. 131-3, at 16–17). He further spoke with EN-CAS and confirmed “that they did the experiments correctly and that their instruments were calibrated and such.” (*Id.*, at 16). Dr. Bowden also testified that he conducted the testing himself. (Doc. 111-11, at 47). Furthermore, Dr. Bowden testified that visual inspections are common in science, that these kinds of tests commonly do not have exact numbers, and that it is common for just the photograph to tell the story. (*Id.*, at 54–55). The Court thus finds that experts in this field would reasonably rely on the EN-CAS test results.

The Court further finds that the EN-CAS testing itself is admissible under Rule 702 of the Federal Rules of Evidence. First, the EN-CAS testing would help the fact-finder determine a fact in issue. FED. R. EVID. 702. Specifically, the EN-CAS testing results would help the fact-finder determine whether the Accused Products infringed on the “improved and even application” limitation, because it discusses how uniformly these

products coat urea. (*See, e.g.*, Doc. 116-2, at 189).

Second, the Court finds that the EN-CAS testing is “based upon sufficient facts or data.” FED. R. EVID. 702. Specifically, the EN-CAS testing method is based off visual impressions and characteristics of the samples themselves: Dr. Bowden testified that the Simple Coating method used in the EN-CAS test was an “examination of the prills . . .to see how evenly they were coated.” (Doc. 111-11, at 49). It “looked for speckles and clumping.” (*Id.*, at 50). Dr. Bowden described the method as taking photographs and then conducting a visual inspection. (*Id.*, at 54).

Third, the Court finds that the EN-CAS testing method used “reliable principles and methods.” FED. R. EVID. 702. Here, the EN-CAS method was “tested,” as the Court noted above. Dr. Bowden conducted “the testing” himself. (Doc. 111-11, at 47). Though Dr. Bowden did not perform this testing until after his Expert Report, the inquiry of reliability does not turn on when reliability was confirmed.

The “peer review and publication” factor is not satisfied. As plaintiffs note, Dr. Bowden was not aware of published standards or publications of the EN-CAS testing. (Docs. 111-1, at 16; 111-11, at 52). On this record, it appears the EN-CAS method has not been subject to peer review and publication. But that is not sufficient to exclude the EN-CAS method.

The “error rate” factor does not apply here. Plaintiffs assert that the EN-CAS evidence is unreliable because it has no objective criteria and that there is no evidence of any method to compute margins of error. (Doc. 111-1, at 16–17). The Court, however, does not find that quantitative computation of margins of error is relevant to a visual rating system. In *Affiliati Network, Inc. v. Wanamaker*, a court found that an expert’s “calculations” of a party’s financial losses were unreliable when, among other failures, it did not describe a rate of error in the “calculations.” Case No.: 1:16-cv-24097-UU, 2017 WL 7361048, at *7 (S.D. Fla. Aug. 14, 2017). That court, however, found that

an expert's review of a "ratings system" was unreliable because that review "relie[d] entirely on anecdotal complaints by anonymous sources, without verifying, or attempting to verify, the authenticity of any of the ratings or reviews." *Id.*, at *9. There, though the court raised the problem of the "error rate" with one aspect of the expert's opinion, it did not do so with the "ratings system." *Id.*, at *7, *9. Furthermore, unlike the "ratings system" in *Affliati*, the EN-CAS rating system here included a verbal description that gave guidance to each numeric rating. Further, the EN-CAS rating report is not "anonymous" because it is tied to the EN-CAS organization and signed by its president. (Doc. 111-6, at 269).

Plaintiffs' precedent of *In re Mirena Ius Levonorgestrel-Related Prods. Liability Litigation (No. II)* does not support their case. (Doc. 111-1, at 17 (citing 341 F. Supp. 3d 213, 275 (S.D.N.Y. 2018))). In *Mirena*, the court excluded an expert opinion when it satisfied none of the four reliability factors of *Daubert*. 341 F. Supp. 3d at 275. *Mirena* concerned a "multi-factor inquiry" of nine factors to determine epidemiological causality. *Id.*, at 247. The court concluded that the opinion in question "d[id] not satisfy any of the four reliability factors identified in *Daubert*" and noted that "vetting of a multi-factor inquiry to yield a numeric error rate appears realistically impossible." *Id.* Plaintiffs' citation points to the exclusion of Dr. Fraunfelder as well. (Doc. 111-1, at 17 (citing 341 F. Supp. 3d at 275)). Dr. Fraunfelder relied on a separate multi-factor inquiry which "consists of listing factors that he argues support this conclusion [that Mirena causes IIH]." 341 F. Supp. 3d at 275. There, the court noted that Dr. Fraunfelder's proposed testimony "fail[ed] to meet any of the *Daubert* reliability factors" and noted that the multi-factor inquiry "has no known error rate[.]" *Id.*

The Court, however, does not read this precedent to assert that tests and opinions that do not involve quantitative calculations or numeric error rates are always excluded under *Daubert*. That same case also recognized that "[a] proffered opinion may fail all

four *Daubert* reliability factors and still be admitted.” *Id.*, at 240.

Furthermore, *Mirena* does not apply here. First, the fact in question before the fact-finder there was whether the Mirena IUD caused IHH. *Id.*, at 238. The multi-factor analyses deployed in *Mirena* applied multiple factors to a real-world association to determine that question. *Id.* Each of the expert witnesses that the court excluded found causation based “largely [on] drawing upon existing sources” such as preexisting studies and case reports of different products. *Id.* Here, in contrast, the EN-CAS test method does not address any issue of causation. The question in the EN-CAS test was not why the inhibitors coated the urea prills but how well they coated the urea prills. To that end, the EN-CAS test requires the viewer to apply a single rating based off a visual description of the mixing of inhibitors in urea prills.

Nor does *Metro. Lloyds Ins. Co. of Texas v. Louisiana-Pacific Corp.* apply, because the court did not consider the admissibility of expert opinion in that case. (Doc. 111-1, at 17 (citing No. A-16-CA-00424-SS, 2017 WL 4211025, at *3 (W.D. Tex. Sept. 21, 2017) (purportedly holding in a products liability action that an expert’s letter, not a part of the expert report, which contained no comparison of similar products, was an improper basis for expert opinion))). There, the legal question was not whether expert testimony was admissible but whether it created a genuine dispute of material fact as to the existence of a safer alternative design. *Metro. Lloyds Ins. Co. of Texas*, No. A-16-CA-00424-SS, 2017 WL 4211025, at *4. The court considered, without any question of admissibility, the testimony of an expert concerning alternative designs. *Id.*, at *3. That expert testified in deposition that he “ha[d] no opinions regarding alternative designs in [that] case” and did not provide alternative designs in an expert report. *Id.* The expert’s letter, separate from its expert report, described a different product without any comparison to the product at issue in the litigation. *Id.* The court thus found that plaintiff failed to provide expert opinion on the factual question of “the existence of a safe

alternative design.” *Id.*, at *4. On that ground, it granted summary judgment for the moving party. *Id.* The court, however, did not exclude the expert opinion. *Id.* Thus, this case does not support plaintiffs’ argument.

Turning to the “generally accepted” reliability factor, the Court finds that the EN-CAS method was generally accepted. Under oath, Dr. Bowden testified that visual inspections are common in science, that these kinds of tests commonly do not have exact numbers, and that it is common for just the photograph to tell the story. (Doc. 111-11, at 54–55). Under the generous *Daubert* standard, the Court, thus, is sufficiently persuaded and finds that the EN-CAS testing method is generally accepted.

Having concluded the third prong of Rule 702—“reliability of principles and methods”—the Court turns to the fourth prong of Rule 702, which requires that “the expert has reliably applied the principles and methods to the facts of the case.” FED. R. EVID. 702. The Court finds that the application of this test is reliable for purposes of Rule 702. The testing company assigned a method number to the EN-CAS Simple Coating Test, indicating a pre-existing procedure to conduct this test. (*See* Doc. 111-11, at 53). The EN-CAS results used consistent test result descriptions, for both their “5” and “4” ratings. (Doc. 116-2, at 165, 173, 239, 263, 274) (assigning a 5 with the comment “[s]ample coating is very uniform with no noticeable imperfections.”).

Plaintiffs note discrepancies between some of the comments and the numerical rating. The EN-CAS test results rated a sample of urea as a “4,” but used language corresponding to a “3.” (Doc. 111-1, at 13–14). When a 4 was given, the comments have said that the sample coating was very uniform in color but contained a noticeable amount of speckled urea. (Doc. 116-2, at 189, 211, 222, 293, 316, 329) (assigning a 4 with the comment “[s]ample coating is very uniform in color but contains a noticeable amount of speckled urea”). The rating system, however, assigns a 3 to sample coatings that have “less uniform coloring/speckled urea” and a 4 to sample coatings with

“acceptable coverage” or that “may contain a minor amount of visual imperfections.” *Id.* Thus, there is a question as to whether the presence of “speckled urea” in the sample coating is compatible with a rating of 4.

The Court notes, however, that the same rating system was applied across the different tests, and the same language was assigned to each number on the ratings scale. The record also does not clearly indicate that “speckled urea” does not coincide with visual imperfections, so that any presence of “speckled urea” excludes a score of 4 or 5. It is the comments that are inconsistent with the rating system, not the rating system that is inconsistent with itself. The Court thus finds that the discrepancy does not go to the heart of the method or the test, but to the weight a fact-finder should afford it. That is a matter for the adversary system to resolve. The Court, thus, will not exclude the entire Bowden Expert Report on this ground.

Plaintiffs also appear to assert that examination of photographs is not sufficient to form a reliable method absent other scientifically valid testimony. (Doc. 111-1, at 14). Again, under oath, Bowden testified that visual inspections are common in science, that these kinds of tests commonly do not have exact numbers, and that it is common for just the photograph to tell the story. (Doc. 111-11, at 54).

Plaintiffs’ cited precedent does not help here. (Doc. 111-1, at 14–15 (citing *J.B. Hunt Transp., Inc. v. General Motors Corp.*, 243 F.3d 441, 444 (8th Cir. 2001))). In *J.B. Hunt*, the Court excluded an accident reconstructionist’s expert opinion because it was “premised primarily upon his impressions of the photographs of the scratches in the paint of the vehicles involved in the accident” and because the expert “conceded he had insufficient evidence to completely reconstruct the accident as he theorized.” *Id.* The expert in *JB Hunt* studied photographs of cars made after a car crash to deduce what happened during the car crash, not to observe the results of the car crash. Here, Dr. Bowden studied the photographs to observe the results of the testing, not to deduce what

happened during the testing. Again, he knew the scientific theory behind the testing because he had spoken with Tim Ballard about the process. (Doc. 131-3, at 17).

Warner Chilcott Lab. Ireland Ltd. v. Impax Lab., Inc. is similarly inapplicable. (Doc. 111-1, at (citing Civ. Nos. 2:08- cv-06304 (WJM), 2:09-cv-02073 (WJM), 2:09-cv-01233 (WJM), 2012 WL 1551709, at *8 (D.N.J. Apr. 30, 2012))). There, the Court rejected expert testimony that relied on a novel testing method to assert a particular result, when five widely accepted testing methods showed the opposite. *Id.* Here, nothing in the record suggests that the EN-CAS coating test is novel, or that there are other widely accepted testing methods, let alone testing methods that contradict the EN-CAS coating test.

Plaintiffs' argument that "Dr. Bowden's reliance on a flawed and subjective rating system with analytical gaps in the methodology used by EN-CAS means that the evidence should be excluded" similarly fails. (Doc. 111-1, at 15). Again, the Bowden Expert Report did not rely exclusively on the EN-CAS testing. (Doc. 116-2, at 145-46, 188-89). Furthermore, plaintiffs' precedent concerning "analytical gaps" does not apply. Plaintiffs' cited precedent of *Barrett v. Rhodia, Inc.*, does not apply because there the court affirmed the exclusion of expert testimony when that testimony was based "entirely on the opinion of Dr. Janss, which had been deemed excessively speculative [and was thus excluded]." 606 F.3d 975, 982 (8th Cir. 2010). Here, in contrast, Dr. Bowden relied on other evidence to assert that the Accused Products infringed on the "improved and even application" limitation. (Doc. 116-2, at 145-46, 188-89).

Plaintiffs' precedent of *Bland v. Verizon Wireless, L.L.C.*, also does not apply because there the court affirmed the exclusion of a causation opinion when that opinion lacked knowledge regarding "what level of exposure to freon constitutes an appreciable risk of causing asthma and the specific concentration and degree of Bland's exposure to the freon" and thus created too great an analytical gap. 538 F.3d 893, 898 (8th Cir.

2008). There, the expert opinion offered an opinion that a person's exposure to freon caused that person to develop asthma, but did not identify how much exposure to freon would cause asthma, nor how much freon the person was exposed to. *Id.* Here, in contrast, the EN-CAS testing identified what visual characteristics merited which ranking, and what visual characteristics were present in a particular sample. (*See, e.g.*, Doc. 116-2, at 189).

The Court also notes that defendants' argument that the EN-CAS testing coincides with the instructions for using the products (Doc. 131, at 14) does not bear on whether the testing system is reliable. These instructions discuss how to mix the NITROLOCK with urea, but do not contemplate users measuring the coating and assigning a numerical value. (*See* Doc. 108-3, at 55).

Nor does defendants' argument that Dr. Bowden reviewed the test protocol labeled "Standard Application Method" (Doc. 131, at 11) carry the day. Though defendants assert that Dr. Bowden reviewed a test protocol labeled "Standard Application Method," Dr. Bowden did not specify a test protocol or label it the Standard Application Method in his deposition testimony. (Doc. 131-3, at 13-21). Furthermore, the record does not clearly indicate that the "Standard Application Method" described is the method that EN-CAS or Dr. Bowden followed. (*Id.*, at 22-23). Those documents do not show their provenance. Though the documents note that they tested the Accused Products (*id.*), they do not tell when the tests were conducted, nor who wrote the test procedures.

For these reasons, the Court declines to exclude the Bowden Expert Report based on its reliance on the EN-CAS rating test.

b. Chill Point Definitions

Plaintiffs also assert that the Bowden Expert Report is unreliable because it offers inconsistent, "unsupported and contradictory definitions" about the terms chill-point and freeze-point. (Doc. 111-1, at 26-27). Again, claim 1 of the '306 Patent includes a

limitation that the composition has a “chill point” of less than 40° F. ’306 Patent col. 21 l. 30–32. The Court does not find that the Bowden Expert Report offered contradictory testimony on the definition of a “chill point.”

Dr. Bowden testified that a “[f]reeze point is when a liquid becomes a solid.” (Doc. 111-11, at 67). In contrast, a chill point is when “what’s in solution precipitates out.” (*Id.*). He testifies that “chill points” are “a common thing in organic chemistry” for when scientists “look to see when things crystallize, for instance.” (*Id.*). When asked if the terms were interchangeable, Dr. Bowden provided the different definitions for freeze point and chill point, and then said that “a chill point could be the same as a freeze point but is not necessarily the same.” (*Id.*, at 68). The Court does not read his statement to mean that “chill point” and “freeze point” have the same definition, but only that some substances and solutions could have the same chill point and freeze point by “precipitat[ing] out” and becoming “a solid” at the same temperature. (Doc. 111-11, at 67–68).

Plaintiffs assert that Dr. Bowden indefinitely equates “chill point” and “freeze point.” Plaintiffs reach this conclusion by combining Dr. Bowden’s assertion that “the solvent should have a low chill point so it remains a liquid when exposed to low temperatures” and Dr. Bowden’s purported assertion that “the ‘Chill Point’ limitation recited in claims 1 and 9 of the ’306 Patent are met by the Accused Products having a ‘Freeze Point’ of 0° F.” (Doc. 111-1, at 26 (citing Doc. 111-6, at 12, 37–58)). This argument mischaracterizes the record. The Bowden Expert Report does not rely on the Accused Products’ freeze points to satisfy the “chill point” limitation: though the Report offered a test result showing that the NITROLOCK had a freezing point of 0° F, it also offered and highlighted a test result showing that the NITROLOCK had a chill point of -22° F. (Doc. 116-2, at 191–92). Similarly, the Bowden Expert Report for HI-TEST offered and highlighted a chill point of -24° F (Doc. 116-2, at 149), while the freeze-

point is marked as either 0° F, (Doc. 116-2, at 148), or less than -17.7° C. (*Id.*).

Plaintiffs later assert that Dr. Bowden's conclusions that the Accused Products satisfy the chill-point limitation are based on unreliable methodology due to his reliance on the third party testing. (Doc. 111-1, at 27). Again, however, Dr. Bowden could reasonably rely on the EN-CAS third-party test, amongst other things, because "scientific test results prepared by others may constitute the type of evidence that is reasonably relied upon" under Rule 703. *Monsanto*, 516 F.3d at 1015.

Plaintiffs further assert that the Bowden Expert Report was unreliable due to relying on EN-CAS test results that gave chill-points different from the freeze-points. (Doc. 111-1, at 26). Based on plaintiffs' prior argument that Dr. Bowden conflates the two definitions, plaintiffs appear to first, imply that a test would be unreliable if it shows a chill-point different from a freeze-point, then second, assert that the EN-CAS lab test shows chill-points that are different from the freeze points provided in each product's Safety Data Sheet. (*Id.*). Again, because the Court does not read Dr. Bowden to testify that chill points and freeze points are the same definition, the Court finds no unreliability in a product having different chill points and freeze points.

The Court thus declines to exclude the Bowden Expert Report on any of these grounds.

3. Dr. Bowden's Notes

Plaintiffs assert that Dr. Bowden's notes (Doc. 111-6, at 259-66), purportedly "late," should be excluded as "subjective, not helpful, and inconsistent with *Daubert* and *Kumho Tire*." (Doc. 111-1, at 18). Plaintiffs also assert that "[t]he notes are not proper rebuttal opinions," and that "the notes are not proper supplementation consistent with Federal Rules of Civil Procedure 26 and 37." (*Id.*, at 18-19).¹⁶ The Court will not

¹⁶ Though plaintiffs also assert that these "rebuttal opinion[s]" cannot prevent summary judgment of non-infringement based on a lack of evidence, the Court does not reach that argument because

exclude these notes.

a. Subjective Assertions

The Court finds that these notes are not subjective assertions. Plaintiffs characterize these notes as saying that Dr. Bowden “coated urea with the NITROLOCK, and it ‘appears well coated on the urea.’” (*Id.*, at 19 (quoting Doc. 111-6, at 259)). Plaintiffs assert that Dr. Bowden’s statement that the products appearing “well coated” without any criteria does not satisfy the reliability requirements of *Daubert* and *Kumho Tire*. (*Id.*). As the Court noted before, Dr. Bowden already testified that visual inspections are common in science. (*Id.*, at 54). Furthermore, the notes contain more than Dr. Bowden’s assertion: they also include the photographs of urea coated by specific amounts of the NITROLOCK and NEON SOURCE. (Doc. 111-6, at 260–66).

Plaintiffs also appear to assert that the notes are subjective because they (1) state that the inhibitors “appear well coated on the urea,” (2) state that “blue and green dyes had diffused well into the [urea] prills” but (3) do not state that the inhibitors penetrated into the urea prills. (Doc. 111-1, at 19 (quoting Doc. 111-6, at 259–266)). It appears that plaintiffs take issue with the notes not stating that the inhibitors themselves penetrated into the urea prills. The Court finds, however, that the notes did sufficiently state that the inhibitors penetrated into the urea prills. In the photographs accompanying the notes themselves, Dr. Bowden noted that the NITROLOCK was colored green (Doc. 111-6, at 260) and NEON SURFACE was colored blue. (*Id.*, at 263). The notes asserted that “blue and green dyes had diffused well” into the urea prills. (*Id.*, at 259). It is reasonable to infer that noting the diffusion of the blue and green dyes is tantamount to noting the penetration of the inhibitors themselves. Notably, Dr. Bowden also testified that he did

it denies plaintiffs’ motion for summary judgment based on the evidence in the Bowden Expert Report. (Doc. 111-1, at 20).

not need to say that “the inhibitors penetrated into the prills” because “the dyes report the inhibitors.” (Doc. 111-11, at 59).

b. Proper Rebuttal Opinions

The Court turns to plaintiffs’ “proper rebuttal” argument. Plaintiffs assert that the Notes are not proper rebuttal opinions provided for in the Scheduling Order. (*Id.*, at 19). It appears to the Court that plaintiffs argue that these notes were untimely and thus improper. The Court, however, declines to exclude these notes on this ground.

The Court finds that Dr. Bowden’s notes were untimely. Dr. Bowden’s notes, properly characterized as “Expert Witness Disclosures by Party with the burden of proof,” were due on June 25, 2020. (Doc. 90, at 2). But instead, the notes were dated on September 25, 2020. (Doc. 111-6, at 259). Even though these notes are untimely, the Court will not bar them on this ground for the reasons below.

The Court can impose sanctions for a party belatedly filing an expert report, such as by excluding the party’s evidence, unless the failure to meet a deadline was either substantially justified or harmless. FED. R. CIV. P. 16(f); *see Trost v. Trek Bicycle Corp.*, 162 F.3d 1004, 1008 (8th Cir. 1998); *Engineered Prods. Co. v. Donaldson Co.*, 313 F. Supp. 2d 951, 1004–05 (N.D. Iowa 2004). The party’s delay is substantially justified if it has “an adequate reason” for failing to disclose an expert earlier. *Engineered Prods. Co.*, 313 F. Supp. 2d at 1005. In *Engineered Products*, the court found an “adequate reason” for failing to disclose on time when a party only had reason to name an expert to address a proffered defense after the Court ruled in a certain matter—essentially, the party only had reason to develop and disclose this evidence later in the process. *Id.* The Court finds that the same reason applies here. Here, defendants assert, supported by the record, that they only knew of the need for Bowden’s late notes on the disclosure due date, because plaintiffs offered a new ground for non-infringement when they disclosed John Klein’s expert testimony that the Accused Products were not “able

to provide improved and even application to fertilizer granules.” (Doc. 131, at 15 (citing (Doc. 130-2, at 28–29))). The record bears this out, because in neither the April 17, 2020 Answer to Interrogatories nor the August 9, 2019 Answer to Interrogatories did plaintiffs claim non-infringement due to the “improved and even application to fertilizer granules” limitation. Notably, plaintiffs claimed non-infringement due to other grounds. (Doc. 116-2, at 26-33, 38, 40).

The Court also finds that defendants’ delay was harmless because the notes were late by only three months, with more than a year until trial. Furthermore, the disclosure did not “surprise” the plaintiffs; plaintiffs could not be surprised by the content of this report because defendants had the burden to assert that plaintiffs infringed upon every limitation of the claim in question, including the “improved and even application” limitation.

c. Improper Supplementation

Plaintiffs also assert that Dr. Bowden’s late notes are not proper supplementation for several reasons: (1) Dr. Bowden testified that he is not relying on them (Doc. 112-1, at 3 (Doc. 111-11, at 62–63)); (2) they do not supplement his earlier opinions or the infringement contentions, which do not say anything about penetrating urea (*Id.* (citing Doc. 111-6, at 45–46, 73–74, 120–123, 199–217)), and (3) they are not harmless because they do not contain the required statement of opinions regarding whether he is contending the nitrification inhibitor penetrated the urea or just that the dye did. (*Id.* (citing Doc. 111-6, at 159)). The Court finds that Dr. Bowden’s late notes are proper supplementation.

Again, under Rule 26(e), the report must be supplemented “if the party learns that in some material respect the disclosure or response is incomplete or incorrect, and if the additional or corrective information has not otherwise been made known to the other parties during the discovery process or in writing.” FED. R. CIV. P. 26(e)(1)(A). The

report and any supplementation allow the opposing party “a reasonable opportunity to prepare for effective cross examination and perhaps arrange for expert testimony from other witnesses.” FED. R. CIV. P. 26 (advisory committee notes to 1993 amendment).

The Court construes plaintiffs’ “not relying on them” argument (Doc. 112-1, at 3) as saying that the disclosure or response was not “incomplete or incorrect” in “some material respect” under Rule 26(e)(1)(A). The Court finds, though, that the original disclosure was incomplete in a respect. Though the Bowden Expert Report noted the usefulness of nitrification inhibitors penetrated into urea and how it helps with application, for example by stating that improved penetration “result[s] in a greater absorption and overall improved coverage than the prior art,” (Doc. 116-2, at 113), it did not describe the penetration by the NITROLOCK. This information could be material to a fact-finder that considers whether the NITROLOCK infringed upon the “improved and even application” limitation. Thus, information on penetration of the NITROLOCK would be material.

As plaintiffs note, Dr. Bowden testified that he did not rely on the opinion. (Doc. 112-1, at 2). Specifically, he said the test was to show “[t]hat the NEON SURFACE- and the NITROLOCK-coated urea penetrated the prills.” (Doc. 111-11, at 61–62). Dr. Bowden also testified he wanted to “understand for [him]self how this process worked out.” (*Id.*, at 61). He wanted to see what would happen so that if “there was a question of how the NITROLOCK and NEON SURFACE penetrated, [he] would know that [he] ha[d] done it.” (*Id.*). Dr. Bowden, however, conducted this test after writing up his Expert Report. But the Court notes that the manner in which Dr. Bowden appears to describe the utility of this test is not an analysis in view of the legal test for materiality. It was not critical for Dr. Bowden to know that the NITROLOCK penetrated the urea prills to form an opinion. But that does not change whether the information is useful or material to a fact-finder.

Plaintiffs' arguments that the late notes "do[] not supplement his earlier opinions or the infringement contentions, which do not say anything about penetrating urea" mischaracterize the Bowden Expert Report. (Doc. 112-1, at 3). The Bowden Expert Report does discuss "penetrating urea." It notes that a surface coating "that does not penetrate into the granules will lead to uneven distributions of inhibitors," while an even coating that penetrates into the granules leads to a consistent release of inhibitors. (Doc. 116-2, at 111-12). It also notes that "[t]he '306 patent discloses that the urease and nitrification inhibitors penetrate into urea granules." (*Id.*, at 113). Furthermore, the late notes use terms other than penetration, as well. For example, they discuss that the inhibitors are "well coated" on the urea. (Doc. 111-6, at 259).

Plaintiffs also assert that permitting these notes as supplementation would not be harmless under Federal Rule of Civil Procedure 37 because these notes (1) "were produced three months after the deadline"; (2) were sent "with only one intervening business day before Dr. Bowden's deposition"; and (3) did not provide any indication that Dr. Bowden opined on improved and even application under the '306 Patent or on whether a nitrification inhibitor penetrated into urea, which plaintiffs contend were not mentioned in the earlier report or infringement contentions. (Doc. 111-1, at 21).

Under Rule 37(c), "a party who fails to provide information . . . as required by Rule 26(a)" cannot "use that information or witness to supply evidence on a motion, at a hearing, or at trial, unless the failure was substantially justified or is harmless." FED. R. CIV. P. 37(c)(1). The Court, however, has already found the timing of the notes "substantially justified" and "harmless" under Rule 16(f). FED. R. CIV. P. 16(f); *see Trost v. Trek Bicycle Corp.*, 162 F.3d 1004, 1008 (8th Cir. 1998); *Engineered Prods. Co. v. Donaldson Co.*, 313 F. Supp. 2d 951, 1004-05 (N.D. Iowa 2004). The same reasons apply here. Defendants assert, supported by the record, that they only knew of the need for Bowden's late notes on the due date, when plaintiffs offered a new ground

for non-infringement when they disclosed John Klein’s expert testimony that the Accused Products were not “able to provide improved and even application to fertilizer granules.” (Doc. 131, at 15). Again, the record bears this out, because in neither the April 17, 2020 Answer to Interrogatories nor the August 9, 2019 Answer to Interrogatories did plaintiffs claim non-infringement due to the “improved and even application to fertilizer granules” limitation. Notably, plaintiffs claimed non-infringement due to other grounds. (Doc. 116-2, at 26-33, 38, 40).

The Court again finds that defendants’ delay was harmless because the notes were late by only three months, with more than a year until trial. Furthermore, the disclosure did not “surprise” the plaintiffs; plaintiffs could not be surprised by defendants addressing plaintiffs’ new ground for non-infringement, because defendants had the burden to assert that plaintiffs infringed upon every limitation of the claim in question, including the “improved and even application” limitation.

In sum, the Court finds that this is a proper supplementation.¹⁷

d. Rule 26 Failure to State Opinions and Their Basis

Plaintiffs’ arguments that Dr. Bowden’s notes violate Rule 26(a)(2) by not containing the complete statements of opinions and their facts miss the mark. (Doc. 111-1, at 20–21). Plaintiffs assert that even if the late notes are supplementations, they are not proper opinions under Rule 26(a)(2). (*Id.*). Under Rule 26(a)(2), an expert report must contain “a complete statement of all opinions the witness will express and the basis

¹⁷ Because, as set out later, supplementations do not need to satisfy Rule 26(a)(2) on their own, plaintiffs’ argument that the late notes do not show an opinion or basis for “improved and even application under the ’306 Patent” or on “whether a nitrification inhibitor penetrated into urea, something that was not mentioned in either Dr. Bowden’s earlier report or in [defendants’] infringement contentions,” misses the legal mark. (Doc. 111-1, at 21) (emphasis omitted in first quotation). Furthermore, as set out later, the Court finds that the Bowden Expert Report did mention that nitrification inhibitors penetrated into urea. (Doc. 116-2, at 113).

and reasons for them” and “the facts or data considered by the witness in forming them.” Plaintiffs assert that stating the products “appear[] well coated on the urea” does not satisfy this rule because it does not state any basis for suggesting that there is improved and even application. (*Id.*, at 20 (first quoting Doc. 111-6, at 259)).

Rule 26(a)(2), however, does not require that supplementations themselves contain the mandated “complete statement of all opinions the witness will express and the basis and reasons for them.” FED. R. CIV. P. 26(a)(2)(B)(i). Instead, the expert report and supplementation in combination must provide that statement. Here, the Bowden Expert Report states a basis for suggesting that the NITROLOCK provides improved and even application by offering several pieces of evidence to support its assertion that the NITROLOCK “contains an organic liquid solvating system that is capable of providing improved and even application.” (Doc. 116-2, at 187–89).

Plaintiffs’ argument that the notes do not offer any opinion or basis for an opinion that the inhibitors penetrate the urea also fails. (Doc. 111-1, at 20). On their face, the notes state that Dr. Bowden added the NITROLOCK to urea in a jar and NEON SURFACE to urea in a jar (*Id.*, at 259), that the NITROLOCK was “colored green” (*Id.*, at 260), that NEON SURFACE was “colored blue” (*Id.*, at 263), and that the next day, the “blue and green dyes had diffused well into the prills [of urea].” (*Id.*, at 259). On these facts, the notes both assert and provide a basis to assert that the NITROLOCK—colored green—and the NEON SURFACE—colored blue—had penetrated into the urea prills.

4. Tim Ballard (EN-CAS Witness) Disclosure

The Court turns to plaintiffs’ third assertion, that the disclosure regarding Tim Ballard is too late and insufficient to support a finding of infringement of the “improved and even application” limitation for the several reasons described below. Plaintiffs move to exclude Tim Ballard’s “evidence or opinions.” (*Id.*, at 23–24).

As a preliminary matter, the Court notes that plaintiffs did not file a motion to compel for a new statement regarding Tim Ballard. A court is free to deem purported discovery violations waived when the parties know of the issue well in advance of trial but failed to bring the matter before the court in a timely fashion. *Haviland v. Cath. Health Initiatives - Iowa, Corp.*, 692 F. Supp. 2d 1040, 1044–45 (S.D. Iowa 2010). “A party cannot ignore available discovery remedies for months and then, on the eve of trial, move the court for an order compelling production.” *Kayser v. Motors Liquidation Co. GUC Tr.*, No. C11-2063, 2012 WL 6184908, at *3 (N.D. Iowa Dec. 11, 2012) (quotation omitted). Here, however, plaintiffs had only a month between receiving the statement about Mr. Ballard being “likely to have knowledge regarding tests performed by Mr. Ballard on samples of the Accused Products produced in discovery in this matter” and the deadline for dispositive motions at that time. (Docs. 111-11, at 77, 81 (Defendants’ Second Amended Initial Disclosures served on September 21, 2020), 80; 78, at 2 (setting October 21, 2020 deadline for dispositive motions)). Even though plaintiffs never challenged this purported violation with a motion to compel, the Court acknowledges that they had limited time to challenge it. Accordingly, it turns to the merits.

Plaintiffs first assert that Mr. Ballard’s evidence does not “cure the evidentiary weaknesses” concerning the EN-CAS test in Dr. Bowden’s report. (*Id.*, at 22). That argument concerns the weakness of the EN-CAS test, not the weakness of the Ballard evidence, so the Court does not discuss it further here.

Plaintiffs also assert that defendants did not supply sufficient or required disclosures under Federal Rule for Civil Procedure 26(a)(2), which governs the disclosure of “expert testimony.” (*Id.*). “[A] party must disclose to the other parties the identity of any witness it may use at trial to present evidence” under the Rules’ expert witness provisions. FED. R. CIV. P. 26(a)(2)(A). “[I]f the witness is one retained or specially employed to provide expert testimony in the case” or if the witness’s “duties as the party’s

employee regularly involve giving expert testimony,” the party must also provide a written report prepared and signed by the witness. FED. R. CIV. P. 26(a)(2)(B). For all other expert witnesses, disclosures must instead include “the subject matter on which the witness is expected to present evidence” and “a summary of the facts and opinions to which the witness is expected to testify.” FED. R. CIV. P. 26(a)(2)(C).

Notably, Rule 26(a)(2) governs only expert testimony, so the Court must first consider whether Mr. Ballard’s testimony is expert testimony or fact testimony. The Eighth Circuit Court of Appeals has recognized the distinction between persons testifying as “experts” and persons with “expert” qualifications who testify as “fact witnesses” in a particular case. *Williams v. Sec. Nat’l Bank*, 358 F. Supp. 2d 782, 791 (N.D. Iowa 2005) (discussing *Easley v. Anheuser-Busch, Inc.*, 758 F.2d 251 (8th Cir. 1985) and *Long v. Cottrell, Inc.*, 265 F.3d 663 (8th Cir. 2001)). Even if an expert witness is barred from giving expert testimony, she may still give fact testimony as a fact witness. *Easley*, 758 F.2d at 257–58 (holding that the district court erred in preventing in-house experts from testifying as “fact witnesses” even when the trial court properly excluded their “expert” testimony). For example, a witness with expertise testifies as a fact witness if she testifies based on “first-hand experience from working in the industry” and “involvement in [the defendant]’s design and testing process[.]” *Long*, 265 F.3d at 668.

Here, it does not appear that defense counsel proffers Mr. Ballard to provide exclusively expert opinion. The Court notes, however, that defense counsel hired Mr. Ballard to perform the EN-CAS tests. (Docs. 111-6, at 268–70; 111-7, at 15). Thus, the question is whether Mr. Ballard would provide expert testimony in discussing these tests.

Plaintiffs assert that “any testimony by [Mr. Ballard] about his testing and rating would purportedly rely upon his technical or specialized knowledge.” (Doc. 111-1, at 25) (citing Doc. 111-11, at 77). Defendants claim that “[Mr.] Ballard’s testimony

concerns the coating tests performed by his laboratory, which he signed.” (Doc. 131 at 15). Defendants did disclose that “Mr. Ballard is likely to have knowledge regarding tests performed by Mr. Ballard on samples of the Accused Products produced in discovery in this matter.” (Doc. 111-11, at 77). At oral argument, defense counsel asserted that it was “not proffering Mr. Ballard as an expert” and that Mr. Ballard was “not giving expert testimony or expert opinion.” (Doc. 148, at 66).

Despite plaintiffs’ assertion that any testimony about testing and rating would rely upon Mr. Ballard’s “technical or specialized knowledge,” (Doc. 111-1, at 25), the Eighth Circuit accepted as fact testimony an expert’s testimony based on his first-hand experience in the “design and testing” process. *Long*, at 265 F.3d at 668. Here, Mr. Ballard could conceivably testify based on his first-hand experience in the “design and testing process” of the EN-CAS test. Thus, on this record and at this stage, the Court does not find that defendants introduce Mr. Ballard’s testimony “regarding tests performed by Mr. Ballard on samples of the Accused Products” solely as expert testimony. Although Mr. Ballard was hired by defense counsel to perform the tests, he does not appear to have been hired to provide expert testimony. Furthermore, defendants appear to rely on Dr. Bowden, not Mr. Ballard, and the Bowden Expert Report for expert opinions on infringement and on the background science.

Because at this stage and from this record Mr. Ballard’s testimony is not “expert opinion,” Rule 26(a)(2) does not apply, so the Court will not exclude Mr. Ballard’s testimony for lack of a 26(a)(2)(B) report or lack of a 26(a)(2)(C) disclosure. Should counsel attempt to elicit expert opinions from Mr. Ballard, rather than testimony grounded in personal knowledge, and should opposing counsel object to Mr. Ballard’s testimony, the Court will resolve that issue at trial pending further factual development.

F. Cross-Motions for Summary Judgment of Infringement/Non-Infringement

Considering the evidence above along with the rest of the record, the Court turns to the question of whether plaintiffs infringed on claims 1–10 of the '306 Patent. To establish literal infringement, every limitation set forth in a claim must be found in an accused product, exactly. *Southwall Techs., Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1575 (Fed. Cir. 1995). A patentee ordinarily bears the burden of proving infringement, even if the patentee is a defendant in a declaratory judgment. *Medtronic, Inc. v. Mirowski Fam. Ventures, LLC*, 571 U.S. 191, 193 (2014). Here, defendants have the burden of proof to show every limitation of the claim is found in the Accused Products.

Having found that the '231 Patent is invalid, the Court limits its analysis of infringement to the '306 Patent. Because parties concurrently pursue summary judgment, “each summary judgment motion must be evaluated independently to determine whether there exists a genuine dispute of material fact and whether the movant is entitled to judgment as a matter of law.” *Engineered Prods.*, 165 F. Supp. 2d at 842 (citing *Wermager v. Cormorant Township Bd.*, 716 F.2d 1211, 1214 (8th Cir. 1983)). Thus, the Court must address two related questions. First, in evaluating plaintiffs’ motion for summary judgment (Doc. 111), when the facts are taken in favor of defendants, did plaintiffs meet the burden to show that there was no genuine dispute of material fact that plaintiffs did not practice each and every claim limitation? Second, in evaluating defendants’ motion for summary judgment (Doc. 108), when the facts are taken in favor of plaintiffs, did defendants meet the burden to show that there was no genuine dispute of material fact that plaintiffs did indeed practice each and every claim limitation?

1. Plaintiffs’ Motion for Summary Judgment of Non-Infringement

The Court first addresses plaintiffs’ motion for summary judgment of non-infringement by the NITROLOCK and the HI-TEST. (Doc. 111-1, at 6). Defendants

have the burden of persuasion to show infringement at trial. *Medtronic, Inc.*, 571 U.S. at 193. Therefore, plaintiffs, as the moving party, can meet its burden of production by showing that defendants' evidence is insufficient to establish that the Accused Products infringe on each and every limitation of the '306 Patent. *See Southwall Techs.*, 54 F.3d at 1575. Here, plaintiffs did not meet this burden. The Court thus **denies** plaintiffs' motion for summary judgment of non-infringement. (Doc. 111).

Again, as background, claims 1 and 9 of the '306 Patent recites two relevant limitations. First, that the organic liquid solvating system must be "able to provide improved and even application to fertilizer granules of nitrification inhibitors while not causing clumping of the granules." '306 Patent col. 21. l. 27–29; col. 22 l. 42–44. Second, that the organic liquid solvating system must "result[] in a composition comprising at least one of nitrification inhibitor at levels of 1-50% with a Chill Point <40° F." *Id.*, at col. 21. l. 30–32; col. 22 l. 45–47. The dependent claims incorporate these limitations.

Plaintiffs first argue that they are entitled to summary judgment of non-infringement if the Court adopted their claim construction. (Doc. 111-1, at 9–10). The Court did not. Plaintiffs then moved to exclude the Bowden Expert Report, Dr. Bowden's late notes, and testimony by Tim Ballard, and then asserts that absent such evidence of infringement they are entitled to summary judgment. (*Id.*, at 11–26). For reasons previously stated in this order, the Court does not exclude this evidence.

Plaintiffs assert that defendants have insufficient evidence that the NITROLOCK and the HI-TEST infringe on the "improved and even application" claim limitation. In their opening brief, plaintiffs' argument rested solely on the fact that the evidence should be excluded. (*Id.*, at 11–26). In response, defendants challenged the exclusion of the Bowden Expert Report (Doc. 131, at 8–15), and raised testimony of a corporate representative who asserted that a previous product of plaintiffs possessed problems.

(*Id.*, at 7–8). In reply, plaintiffs repeated their assertion that the Court should exclude evidence, then argued that the offered testimony does not create genuine disputes of material fact. (Doc. 141, at 9–10).

Plaintiffs did not meet its burden to show insufficient evidence to satisfy the “able to provide improved and even application” limitation. The Bowden Expert Report supports the “even application” prong by disclosing a lab test stating that the sample coating for the HI-TEST and the NITROLOCK were respectively “very uniform with no noticeable imperfections” or “very uniform in color but contain[ing] a noticeable amount of speckled urea.” (Doc. 116-2, at 173, 189).¹⁸ The Report, however, does not by itself show that the HI-TEST and the NITROLOCK provided “improved” application, because it does not compare the HI-TEST or the NITROLOCK to other products. (Doc. 116-2, at 173, 189).

Other evidence offered by defendants does constitute sufficient evidence at this stage that the HI-TEST and the NITROLOCK provide improved application. Defendants offered testimony saying that the NITROLOCK is capable of providing uniform coating, or even coating, or “greater coverage and less likely for clumping if used properly.” (Doc. 131, at 7). Plaintiffs assert that this testimony creates no genuine dispute of material fact as to whether the products provide “improved” and even application, because that uniform coating is what the industry generally expects. (Doc. 141, at 10 (quoting Doc. 131-3, at 10)).

There is a question about the definition of “improved” in this context. Plaintiffs

¹⁸ Defendants raise the issue that plaintiffs did not raise the “improved and even application” as a basis for non-infringement in an interrogatory, and that plaintiffs did not amend their Answer to raise these grounds. (Doc. 131, at n.1.) For purposes of plaintiffs’ motion for summary judgment, however, defendants have the burden of persuasion to show that plaintiffs infringed on every limitation, so plaintiffs can succeed by showing that defendants lack sufficient evidence for any particular limitation.

appear to assume that improved necessarily means “more even” and nothing else, but the Court does not find that is the plain and ordinary meaning of the claim term. Instead, the Court finds the plain and ordinary meaning of “improved” to mean “better in light of problems other than even application and clumping.” This term comes without elaboration in the claims. A person of ordinary skill in the art would thus read “improved” to mean a “better application,” but that definition by itself does not tie “improvement” to “improvement by even application.” Furthermore, claims 1 and 9 also recite that the organic liquid solvating can provide “even application to fertilizer granules of nitrification inhibitors while not causing clumping of the granules.” ’306 Patent, claims 1, 9. Thus, to avoid surplusage the person of ordinary skill would not assume that the meaning of “improved” is limited to “even application” or “clumping.”

Turning to the specification, the ’306 Patent states that the present invention relates to increasing or maintaining nitrogen content in soil through an improved liquid formulation. It then goes on to say that many other methods have positive impact of maintaining the level of nitrogen in the soil, but also have significant problems: “costs of improvement, loss of viability upon storage, and the inability to deliver consistent levels of fertilizer due to poor coating of the inhibitors or clumping of granules.” ’306 Patent col. 3 l. 4–7. The patent later recites “a need for a non-aqueous liquid formulation, which addresses many of the shortcomings discussed above.” *Id.*, at col. 3 l. 16–18. From here, a person of ordinary skill in the art would read improved to mean “better in light of problems other than even application and clumping.” That person of ordinary skill would read the “improved” limitation to extend to, for example, organic liquid solvating systems that remain viable upon storage or have better coating of inhibitors.

Under this construction, plaintiffs’ argument that the Accused Products do not provide improved and even application because its uniform coating is expected by the industry and is thus not improved misses the mark, because “improved” does not apply

only to uniformity.

Defendants also offered in its resistance a corporate representative's testimony that certain of plaintiffs' other products—specifically , the urease inhibitor Arborite—had drawbacks and shortcomings such as not having “good storage characteristics” in part because it “crystallize[d].” (Doc. 131, at 8 (quoting Doc. 131-3, at 6)). Plaintiffs in turn assert that this testimony does not create a genuine issue of material fact about whether the Accused Products themselves can provide “improved and even application.” (Doc. 141, at 10). Defendants, however, also offered in the record Safety Data Sheets—which inform employees about the hazards of the materials they handle—for both the NITROLOCK and the HI-TEST that indicate both products are “stable and non-reactive under normal conditions of use, storage and transport.” (Doc. 108-3, at 67, 93). Viewing the record in the light most favorable to defendants, a reasonable jury could find that the NITROLOCK and the HI-TEST have better—“improved”—storage characteristics compared to the Arborite, because the Arborite does not have “good storage characteristics” while both products are “stable and non-reactive under normal conditions.”

Plaintiffs also did not meet its burden to show insufficient evidence that the NITROLOCK and the HI-TEST products infringe on the “with a Chill Point $<40^{\circ}$ F” limitation. (Doc. 111-1, at 26). The Court notes that despite plaintiffs' contentions, the Bowden Expert Report directly states that the Hi-Test had a chill point of -24° F and the NITROLOCK had a chill point of -22° F. (Doc. 116-2, at 148–49, 191–92). Furthermore, as noted above, the Court does not equate “freeze point” and “chill point.” Apart from moving to exclude the Bowden Expert Report (Doc. 111-1, at 28), plaintiffs did not challenge the sufficiency of evidence for this limitation.

Thus, the Court **denies** plaintiffs' motion for summary judgment of non-

infringement.¹⁹

2. *Defendants' Motion for Summary Judgment of Infringement*

The Court turns to defendants' motion for summary judgment of infringement on the '306 Patent by the NITROLOCK, HI-TEST, LOCK-N, and HI-TEC.²⁰ (Docs. 108, 108-1). Even though the Court addressed a related question in plaintiffs' motion for summary judgment, defendants are now the moving party, so the Court applies a different standard and considers different evidence. For any of these four products, defendants have the burden of persuasion to show that the product infringed on each and every claim limitation. *Medtronic, Inc.*, 571 U.S. at 193; *Southwall Techs.*, 54 F.3d at 1575. Therefore, defendants must support their motion with credible evidence available under Rule 56(c) that would entitle it to a directed verdict if not challenged at trial. *Celotex*, 477 U.S. at 331; *Firemen's Fund*, 8 F.3d at 1310.

Here, defendants' motion for summary judgment of infringement relies solely on the Bowden Expert Report. (Doc. 108-1, at 13–15); (Doc. 116-2, at 136–78) (HI-TEST); (*Id.*, at 179–227) (NITROLOCK); (*Id.*, at 228–80) (HI-TEC); (*Id.*, at 281–357) (LOCK-N). For the following reasons, the Court **denies** summary judgment of infringement for every product, because defendants did not meet their initial burden of production to show that any of the four products infringed on each and every limitation of claims 1–10.²¹

Again, claims 1 and 9 of the '306 Patent recite two relevant limitations. First,

¹⁹ Because the Court did not rely on Dr. Bowden's notes, it does not reach plaintiffs' argument that Dr. Bowden's late notes are rebuttal opinions that cannot be used to avoid summary judgment. (Docs. 111-1, at 18; 141, at 9).

²⁰ Because the Court finds claims 1–4 of the '231 Patent invalid, it does not reach any question of infringement on those claims.

²¹ Accordingly, the Court does not reach plaintiffs' arguments raising purported genuine disputes of material fact. (Doc. 132, at 21).

that the organic liquid solvating system must be “able to provide improved and even application to fertilizer granules of nitrification inhibitors while not causing clumping of the granules.” ’306 Patent, claims 1 and 9. Second, that the organic liquid solvating system must result “in a composition comprising at least one of nitrification inhibitor at levels of 1-50% with a Chill Point <40° F.” ’306 Patent, claims 1 and 9. The dependent claims incorporate these limitations.

a. HI-TEST

The Court **denies** summary judgment of infringement as to the HI-TEST, because defendants did not meet their initial burden of production to show that the HI-TEST infringed on the claim 1 and 9 limitation of being “able to provide improved and even application to fertilizer granules of nitrification inhibitors while not causing clumping of the granules.” The Bowden Expert Report does not support a directed verdict that the HI-TEST infringes on this limitation. (*Id.*, at 145). Though the Bowden Expert Report supports that the HI-TEST provides an even application and avoids clumps, it does not provide any comparison that could support an “improvement.” (*See id.*).

Even if the Court considered the evidence defendants offered in its resistance to plaintiffs’ motion for summary judgment (Doc. 131, at 8), specifically the testimony that plaintiffs’ Arborite product had drawbacks and shortcomings such as not having “good storage characteristics” (Doc. 131-3, at 6), and even if the Court considered the HI-TEST Safety Data Sheet indicating that the HI-TEST is “stable and non-reactive under normal conditions of use, storage and transport” (Doc. 108-3, at 93), the Court would still find at best a triable issue. For example, viewed collectively, this evidence does not show what the corporate representative considered a good storage characteristic, nor does it indicate whether either the Arborite or the HI-TEST were used in normal conditions. On this record, a reasonable jury could find that the HI-TEST did not provide an “improved” application. Thus, the Court would not grant a directed verdict that the HI-TEST

infringes on this claim limitation. Accordingly, the Court **denies** defendants' motion for summary judgment of infringement as it relates to the HI-TEST.

b. NITROLOCK

The Court **denies** summary judgment of infringement as to the NITROLOCK. The problem of "improved and even application" in claims 1–9 and their dependents that plagued the HI-TEST also plagues the NITROLOCK. (Doc. 116-2, at 189). The Bowden Expert Report does not support a directed verdict that the NITROLOCK infringes on this limitation. (*Id.*). Though the Bowden Expert Report supports that the NITROLOCK provides an even application and avoids clumps (*id.*, at 219–22), it does not provide any comparison that could support an "improvement."

Furthermore, the Bowden Expert Report does not make it clear that the NITROLOCK infringes upon claim 8, which recites that the composition is "substantially free of water." (Doc. 116-2, at 207); '306 Patent col. 22 l. 8–9. The Bowden Expert Report accounts for 99.1% of the total weight percentage of the NITROLOCK, and asserts that is sufficient to be "substantially free of water." (Doc. 116-2, at 207). The Court finds that a reasonable jury, viewing the record in the light most favorable to plaintiffs, could find that the NITROLOCK is not "substantially free of water" when water appears to be .9% of its weight percentage. The Court would not grant a directed verdict that the NITROLOCK infringes on this limitation. Accordingly, the Court **denies** defendants' motion for summary judgment of infringement as it relates to the NITROLOCK.

c. HI-TEC

The Court **denies** defendants' motion for summary judgment as to the HI-TEC because defendants did not meet their initial burden of production to show that the HI-TEC infringed on the claim 1 and 9 limitation of being "able to provide improved and even application to fertilizer granules of nitrification inhibitors while not causing

clumping of the granules.” The Bowden Expert Report does not support a directed verdict that the HI-TEC infringes on this limitation. (Doc. 116-2, at 238–39). Though the Expert Report supports that the HI-TEC provides an even coating, it does not provide any comparison that could support an “improvement.”

Defendants offered no other evidence in this motion for summary judgment to support this “improvement.” Though defendants offered testimony about the problems with Arborite in its resistance to plaintiffs’ motion for summary judgment (Doc. 131), plaintiffs’ motion only concerned the NITROLOCK and HI-TEST. Even if the Court were to consider the Arborite testimony and turn to the HI-TEC’s Safety Data Sheet stating that HI-TEC is “[s]table under normal temperature conditions and recommended use” (Doc. 108-3, at 111), that evidence poses at best a triable issue of fact. Again, the cited record does not show what the corporate representative considered a good storage characteristic. Nor does it indicate whether Arborite, or the HI-TEC, are used in normal temperature conditions. A reasonable jury could find that the HI-TEC does not provide an “improved” application over that of the Arborite or any other product. The Court would not grant a directed verdict that the HI-TEC infringes on these claims. The Court, thus, **denies** defendants’ motion for summary judgment of infringement as it pertains to the HI-TEC.

d. LOCK-N

The Court **denies** defendants’ motion for summary judgment as it pertains to the LOCK-N, because defendants did not meet their initial burden of production to show that the LOCK-N infringed on the claim 1 and 9 limitation of being “able to provide improved and even application to fertilizer granules of nitrification inhibitors while not causing clumping of the granules.” The Bowden Expert Report does not support a directed verdict that the LOCK-N infringes on this limitation. (Doc. 116-2, at 326–27). Though the Bowden Expert Report supports that the LOCK-N gives even coating, it does not

provide any comparison that could support an “improvement.”

Defendants offered no other evidence in this motion for summary judgment to support this “improvement.” Though defendants raised the testimony about the problems with Arborite in its resistance to plaintiffs’ motion for summary judgment, plaintiffs’ motion only concerned the NITROLOCK and HI-TEST. Even if the Court were to consider the Arborite improvement argument and turn to the LOCK-N’s Safety Data Sheet’s discussion of safe storage (Doc. 108-3, at 102), at best that improvement is a triable issue of fact. Again, the cited record does not show what the corporate representative considered to be a good storage characteristic. Nor does it indicate whether Arborite, or the LOCK-N, are used in normal temperature conditions. On this record, a reasonable jury could find that the LOCK-N does not provide an “improved” application over that of the Arborite or any other product. The Court would not grant a directed verdict on whether the LOCK-N is “improved,” even compared to the Arborite. The Court, thus, **denies** defendants’ motion for summary judgment of infringement as it pertains to the LOCK-N.

Thus, in sum, the Court **denies** defendants’ motion for summary judgment of infringement.

G. Damages

The Court turns to plaintiffs’ motion for partial summary judgment on damages. (Doc. 111-1, at 31). Plaintiffs move to exclude the forensic accounting report by Shawn Fox (“Fox Report”) for several reasons. First, plaintiffs assert that the Fox Report calculated damages based on the wrong royalty negotiation date (Doc. 111-1, at 31) and calculated damages from a date when defendants did not have a right to the ’306 Patent. (Doc. 111-1, at 33).

Second, plaintiffs assert that defendants “are barred from recovering any damages” before they filed their counterclaim, because defendants did not meet the

statutory marking requirements. (Doc. 111-1, at 33). Plaintiffs also assert that because the Fox Report starts from a date during which defendants failed the marking requirement, the Fox Report should be excluded. (Doc. 111-1, at 33).

Third, plaintiffs also argue that damages should be denied due to a Certificate of Correction (“Certificate”) that the Patent and Trademark Office issued after this counterclaim. Plaintiffs assert that defendants are not entitled to damages before the Certificate because the ’306 Patent was indefinite and thus invalid. (Doc. 111-1, at 33). Plaintiffs also assert that defendants are not entitled to damages after the Certificate issued because defendants did not move for leave to amend the counterclaims to reflect the Certificate. (Doc. 111-1, at 34).

The Court excludes the Fox Report because it used the wrong hypothetical negotiation date and analyzed a hypothetical negotiation between parties that did not have a right to the patent at the time. The Court, however, does not exclude the Report for failure to mark the products or for any reason regarding the Certificate of Correction.

For the reasons below, the Court **grants-in-part** summary judgment of zero damages for alleged infringement before December 18, 2019, because defendants did not meet their burden to show that they marked their articles or notified infringers of the patent before then. *See* 35 U.S.C. §287(a). The Court **denies-in-part** summary judgment of zero damages for alleged infringement on or after December 18, 2019, because defendants’ filing constituted actual notice. The Court would not grant summary judgment of zero damages on any other ground in plaintiffs’ motion.

1. The Fox Report’s Hypothetical Negotiation

Plaintiffs seek to exclude defendants’ evidence of alleged damages on the grounds that it used the wrong royalty date, and is thus inadmissible under Federal Rule of Evidence 702 and *Daubert*. (Doc. 111-1, at 32). Defendants’ evidence is the Fox Report. (Doc. 111-8, at 9). The Fox Report calculates a reasonable royalty based off a

hypothetical negotiation taking place between the parties on July 1, 2018. (Doc. 111-8, at 94). The Court finds, however, that the Fox Report used the wrong date for the hypothetical negotiation, and therefore analyzed the hypothetical negotiation between the wrong parties. Thus, the Court excludes the Fox Report. But for the following reasons, the Court will not enter summary judgment of zero damages based on the exclusion of the Fox Report.

When a court finds infringement, it must award damages that are at a minimum equivalent to “a reasonable royalty for the use made of the invention[.]” 35 U.S.C. § 284. It may, but need not, receive expert testimony to determine “a reasonable royalty.” *Id.*

One common method of evaluating “a reasonable royalty” is to determine a hypothetical negotiation between the patentee and the accused infringer at the time of the infringement. *Ga.-Pacific Corp. v. United States Plywood Corp.*, 318 F. Supp. 1116, 1120-21 (S.D.N.Y. 1970). This inquiry focuses on the parties’ hypothetical agreement right before infringement, between the accused infringer and the party who owned the patent at the time of the infringement, because the accused infringer would not have reason to negotiate with a non-owner before commencing infringement. *Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1324 (Fed. Cir. 2009); *Aqua Shield v. Inter Pool Cover Team*, 774 F.3d 766, 770 (Fed. Cir. 2014). When a patent is jointly owned, absent a contrary agreement, each of the joint owners may practice or license the patented invention without the consent of and without accounting to the other owners. 35 U.S.C. § 262; *Ethicon, Inc. v. U.S. Surgical Corp.*, 135 F.3d 1456, 1468 (Fed. Cir. 1998).

Exclusion of a damages report is appropriate when that report relies on a hypothetical agreement involving a party who did not own the infringed patent at the time of the infringement. *Opticurrent, LLC v. Power Integrations, Inc.*, No. 17-CV-03597-WHO, 2018 WL 6727826, at *9 (N.D. Cal. Dec. 21, 2018); *Warsaw Orthopedic, Inc v.*

Nuvasive, Inc., No. 3:08-CV-01512-CAB-(MDD), 2016 WL 4536740, at *5 (S.D. Cal. June 15, 2016).

Here, the Fox Report calculated damages for the '306 Patent infringement “for the period from July 1, 2018, through April 30, 2020[.]” (Doc. 111-8, at 94). The Report, however, erroneously assumed that Worldsource owned the '306 Patent and licensed it to defendants by April 2017. (Doc. 111-8, at 52, n.249). The Notice of Assignment and Recordation indicates that the earliest assignment to Worldsource was made on November 14, 2018, and the latest assignment was made on December 18, 2018. (Doc. 108-3, at 53). Worldsource, thus, had no ownership interest in the '306 Patent until November 14, 2018. (Doc. 116-2, at 69, 91, 94). It could not have licensed the '306 Patent to defendants by July 1, 2018.

The '306 Patent issued on May 16, 2017. '306 Patent, l.10. Thus, plaintiffs first allegedly infringed on the '306 Patent when they sold the NITROLOCK on May 16, 2017, and then when they sold the HI-TEST in September 2018. (Doc. 111-8, at 24). For either product, then, at the time of alleged infringement, plaintiffs would not have sought a licensing agreement with Worldsource or with defendants, but would have negotiated with any of the seven inventors.²² Thus, a hypothetical negotiation at the time of infringement between plaintiffs and Worldsource or defendants would not help a factfinder determine a reasonable royalty rate. Exclusion is proper on this basis alone.

The Court, however, does not enter summary judgment of zero damages on this ground. (Doc. 141, at 7). There is a presumption of damages where infringement has

²² Although the record indicates that two of the named inventors—Gary David McKnight and Raymond Patrick Perkins—are managers of Worldsource and defendant Eco World, (Doc. 116-2, at 64, 68), the record does not indicate that all seven of the inventors are involved in Worldsource and defendant Eco World. The analysis must begin with the proper parties in mind. *Opticurrent, LLC v. Power Integrations, Inc.*, No. 17-CV-03597-WHO, 2018 WL 6727826, at *9 (N.D. Cal. Dec. 21, 2018).

been established. *Dow Chem. Co. v. Mee Indus., Inc.*, 341 F.3d 1370, 1382 (Fed. Cir. 2003). With infringement assumed, Section 284 requires the Court to award damages “in no event less than a reasonable royalty.” *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1327 (Fed. Cir. 2014), *overruled on other grounds by Williamson v. Citrix Online, LLC*, 792 F.3d 1339 (Fed. Cir. 2015).

Plaintiffs cite *Apple Inc. v. Motorola, Inc.* to assert that because defendants have “no evidence to support a reasonable royalty other than its flawed expert opinions, summary judgment for a zero royalty should be entered.” (Doc. 141, at 7) (citing *Apple*, 757 F.3d at 1327). In that case, however, the Federal Circuit held that “a finding that a royalty estimate may suffer from factual flaws does not, by itself, support the legal conclusion that zero is a reasonable royalty.” *Apple*, 757 F.3d at 1327. If the patentee’s evidence does not support its specific royalty estimate, the fact-finder must determine what royalty is supported by the record. *Id.* For example, if the patentee has weak proof, the fact-finder could award even a nominal royalty, if that royalty was supported by the record. *Id.*

At summary judgment, a judge may only award a zero royalty for infringement if there is no genuine issue of material fact that zero is the only reasonable royalty. *Id.* A lack of expert evidence in the record would not alone support a finding that zero is a reasonable royalty. *Id.*, at 1330. The moving party itself must provide evidence and argument to support a zero royalty. *Id.* at 1329.

The exclusion of the Fox Report is not sufficient grounds to enter summary judgment of zero royalties. The Court turns to plaintiffs’ other arguments to bar damages.

2. Certificate of Correction

Again, plaintiffs assert that the Court should bar defendants from damages for any alleged infringement of the ’306 Patent because due to the Certificate. (111-1, at 34).

Specifically, plaintiffs assert that the '306 Patent was indefinite prior to the issuance of the Certificate, and thus defendants cannot recover damages on an indefinite patent. (Doc. 111-1, at 37). Plaintiffs also assert that defendants cannot recover on the corrected '306 Patent because they have not amended their complaint to allege infringement of the corrected language. (*Id.*).

The Court cannot consider the correction made in the Certificate to this lawsuit, nor can the Court correct the patent claims under its own power. However, the Court finds that the uncorrected patent claims are not invalid for indefiniteness.²³ Therefore, if defendants prove infringement of these claims, defendants could be entitled to damages. The Court thus will not bar defendants from damages for alleged infringement on the ground of the Certificate, if infringement is found.

a. Considering the Corrected Claims

The Court cannot consider the Certificate's correction in this litigation. "[T]he certificate of correction is only effective for causes of action arising after it was issued." *H-W Tech., L.C. v. Overstock.com, Inc.*, 758 F.3d 1329, 1334 (Fed. Cir. 2014) (quotation omitted). Here, defendants filed this counterclaim of patent infringement on February 26, 2020, (Doc. 70), before the Certificate issued on April 28, 2020. Thus, the cause of action for patent infringement did not arise after the Certificate.

Nor can the Court itself retroactively correct the original claims. "A district court can correct a patent only if, among other things, 'the error is evident from the face of the patent.'" *H-W Tech.*, 758 F.3d at 1333 (collecting cases). That is, "[a] district court can correct a patent only if (1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification *and* (2) the prosecution history

²³ For this reason, the Court does not reach plaintiffs' assertions that defendants' failure to seek leave to amend their pleadings to reflect the corrected claims is a ground to bar damages for infringement occurring after the Certificate issued. (Doc. 111-1, at 37).

does not suggest a different interpretation of the claims.” *Grp. One, Ltd. v. Hallmark Cards, Inc.*, 407 F.3d 1297, 1303 (Fed. Cir. 2005) (quotation omitted). Even though the Court can correct certain errors, it does not have the authority to correct “any and all errors that the PTO would be authorized to correct[.]” *Novo Indus., L.P. v. Micro Molds Corp.*, 350 F.3d 1348, 1356 (Fed. Cir. 2003). And a proposed correction is subject to reasonable debate if more than one term can correct the problem. *Stmicroelectronics, Inc. v. Motorola, Inc.*, 327 F. Supp. 2d 687, 701–02 (E.D. Tex. 2004).

Here, by contrast, it is not evident from the face of the patent that the claim is a typo. Each independent claim recites “an alkylene glycol alkyl ether selected from the group *comprising of* dipropylene glycol methyl ether, tripropylene glycol methyl ether, and tripropylene glycol butyl ether.” ’306 Patent, claims 1 and 9 (emphasis added). The specification recites that precise language. ’306 Patent, c.17, 1.43–45; c.18, 1.43–45; c.19, 1.39–43. The specification also recites as part of a set “alkylene glycol alkyl ethers from the group comprising Tripropylene glycol methyl ether, Tripropylene glycol butyl ether[.]” ’306 Patent, c.5, 1.44–46. The specification recites “alkylene glycol alkyl ethers selected from the group consisting of Tripropylene glycol methyl ether, and Tripropylene glycol butyl ether[.]” ’306 Patent, c.8, 1.45–46. Though the specification uses both “comprising of” and “consisting of” with relation to alkylene glycol alkyl ethers, it recites “comprising of” more often. Thus, it is not clear on its face that “comprising of” is a typographical error and that the patentee intended to write “consisting of.” The Court, thus, cannot correct these claims to “consisting of” under its own power.

b. Considering the Uncorrected Claims

Even though the Court cannot consider the corrected claims, it would not enter summary judgment of zero damages for plaintiffs on this ground, because the uncorrected claims are not invalid.

“[A] patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc.*, 572 U.S. 898, 901 (2014). Here, the uncorrected claim language recites “an alkylene glycol alkyl ether selected from the group *comprising of* [various members].” (Doc. 131, at 22) (emphasis added).

Neither party disputes that this is a Markush grouping. “A Markush claim is a particular kind of patent claim that lists alternative species or elements that can be selected as part of the claimed invention.” *Multilayer Stretch Cling Film Holdings, Inc. v. Berry Plastics Corp.*, 831 F.3d 1350, 1357 (Fed. Cir. 2016). It typically appears in the form: “a member selected from the group consisting of A, B, and C.” *Id.* (citations omitted). “[A] Markush group . . . should be closed, i.e. it must be characterized with the transition phrase “consisting of,” rather than “comprising” or “including.” *Abbott Lab’ys v. Baxter Pharm. Prod., Inc.*, 334 F.3d 1274, 1280 (Fed. Cir. 2003) (quotation omitted) (citation omitted).

The question is whether the combination of an open transition phrase such as “comprising” and a Markush claim renders that claim invalid. The Manual for Patent Examining Procedure (“MPEP”) states that “[i]f a Markush grouping requires a material selected from an open list of alternatives (e.g., selected from the group ‘comprising’ or ‘consisting essentially of’ the recited alternatives), the claim should generally be rejected under 35 U.S.C. 112(b) as indefinite because it is unclear what other alternatives are intended to be encompassed by the claim.” MPEP 2173.05(h).

The Federal Circuit, however, has held that the failure to use a proper transition phrase in a Markush group does not in itself render the claim invalid. *Lexington Luminance LLC v. Amazon.com Inc.*, 601 F. App’x 963, 969 (Fed. Cir. 2015). Even if the Markush group uses improper language, the claim remains valid when the

specification describes the elements that are part of the claimed Markush group, in a manner that “informs one skilled in the art, with reasonable certainty, of the scope of the invention.” *Id.*

Here, the Court notes that using “comprising of” does constitute improper Markush language, because that phrase is better read as an open-ended transition phrase. “In the patent claim context, the term ‘comprising’ is well understood to mean ‘including but not limited to.’” *CIAS, Inc. v. All. Gaming Corp.*, 504 F.3d 1356, 1360 (Fed. Cir. 2007). “Consisting of[,]” meanwhile, “is closed-ended and conveys limitation and exclusion.” *Id.*, at 1361. The conventional usage of “comprising” applies to terms such as “comprised of.” *Id.* A court should not find a distinction between different forms of the transition phrase “comprising,” such as “comprising of” or “comprised of,” because the legally operative distinction is between “comprising” and “consisting of.” *Id.* Thus, the Court reads “comprising of” as closer to “comprising” and therefore open-ended.

That failure to use a proper transition phrase in a Markush group, however, does not in itself render the claim invalid, when the written description provides a clear description of the elements that are part of the group, sufficient to inform one skilled in the art, with reasonable certainty, of the scope of the invention. *Lexington Luminance LLC*, 601 F. App'x at 969. Here, the original claim language recites “an alkylene glycol alkyl ether selected from the group comprising of dipropylene glycol methyl ether, tripropylene glycol methyl ether, and tripropylene glycol butyl ether.” ’306 Patent, claims 1 and 9. The question is whether the language used here would inform a person of ordinary skill in the art, by reasonable certainty, as to which ethers fall under the group of “alkylene glycol alkyl ethers.”

The specification recites “an alkylene glycol alkyl ether selected from the group comprising of dipropylene glycol methyl ether, tripropylene glycol methyl ether, and tripropylene glycol butyl ether[.]” ’306 Patent, c.19, l.39–41. It recites as part of a set

“alkylene glycol alkyl ethers from the group comprising Tripropylene glycol methyl ether, Tripropylene glycol butyl ether[.]” ’306 Patent, c.5, 1.44–46. It recites “alkylene glycol alkyl ether selected from the group consisting of Tripropylene glycol methyl ether, and Tripropylene glycol butyl ether[.]” ’306 Patent, c.8, 1.45–46.

Nowhere does the specification name any alkylene glycol alkyl ethers other than “dipropylene glycol methyl ether, tripropylene glycol methyl ether, and tripropylene glycol butyl ether.” Therefore, a person of ordinary skill in the art who read the claims and specification would be reasonably certain that the alkylene glycol alkyl ether is selected only from dipropylene glycol methyl ether, tripropylene glycol methyl ether, and tripropylene glycol butyl ether. Thus, the Court finds that the present Markush claims, uncorrected, are not indefinite. Therefore, the Court will not enter summary judgment of zero royalties on this ground.

3. *Statutory Marking*

Plaintiffs also move for summary judgment of zero damages based on defendants’ purported failure to mark their products or provide actual notice of infringement. (Doc. 111-1, at 32). The Court finds that defendants failed to mark their products. The Court, however, also finds that plaintiffs had actual notice of infringement beginning from December 18, 2019, once defendants moved for leave to file an amended answer, which included a counterclaim of patent infringement. (Doc. 55-2, at 30–35) (filed on December 18, 2019). Therefore, the Court **grants-in-part** summary judgment for zero damages before December 18, 2019, on this ground, but **denies-in-part** summary judgment for zero damages on and after December 18, 2019.

“Pursuant to 35 U.S.C. § 287(a), a patentee who makes or sells a patented article must mark his articles or notify infringers of his patent in order to recover damages.” *Arctic Cat Inc. v. Bombardier Recreational Prod. Inc.*, 876 F.3d 1350, 1365–66 (Fed. Cir. 2017) (citation omitted). The patentee bears the burden of pleading and proving he

complied with § 287(a)'s marking requirement. *Id.*, at 1366. A patentee's licensees must also comply with § 287. *Id.*

A patentee who makes or sells patented articles can satisfy the notice requirement of § 287(a) either by providing constructive notice—i.e., marking its products—or by providing actual notice to an alleged infringer. *Gart v. Logitech, Inc.*, 254 F.3d 1334, 1345 (Fed. Cir. 2001). If the patentee has not marked his articles, he is not entitled to damages for any infringement before the date of actual notice. *Arctic Cat Inc.*, 876 F.3d at 1366. Actual notice requires “the affirmative communication of a specific charge of infringement by a specific accused product or device.” *Amsted Indus. Inc. v. Buckeye Steel Castings Co.*, 24 F.3d 178, 187 (Fed. Cir. 1994). Indeed, “[f]iling of an action for infringement shall constitute such notice.” 35 U.S.C. § 287(a).

As a preliminary matter, the Court clarifies the remedy for violating the notice requirement. Plaintiffs assert that defendants “are barred from recovering any damages before” filing the infringement action, and assert that the Fox Report should be excluded because it calculates damages from before when plaintiffs had notice. (Doc. 111-1, at 33). The Court notes, however, that lack of notice is not a ground to exclude the Fox Report. Instead, the Court may consider evidence of pre-notice infringement to calculate a hypothetical royalty determination, even if that pre-notice infringement does not itself give rise to damages. *Wang Lab'ys, Inc. v. Toshiba Corp.*, 993 F.2d 858, 870 (Fed. Cir. 1993).

a. Constructive Notice

To satisfy the requirements of constructive notice through marking, the Federal Circuit has held that the patentee must show that “substantially all of [its patented products] being distributed were marked, and that once marking was begun, the marking was substantially consistent and continuous.” *Nike*, 138 F.3d 1437, 1446 (Fed. Cir. 1998). There is no compliance with the marking requirement if the patentee marks certain

products, yet continues to supply unmarked products. *Id.* (holding that the patentee was “not in full compliance with the marking statute while it continued to ship its unmarked products” because, in this scenario, “the world cannot be ‘put on notice’”).

An alleged infringer who challenges the patentee’s compliance with § 287 bears “an initial burden of production to articulate the products it believes are unmarked ‘patented articles’ subject to § 287.” *Arctic Cat Inc.*, 876 F.3d at 1368. To satisfy this burden, “[t]he alleged infringer need only put the patentee on notice that he or his authorized licensees sold specific unmarked products which the alleged infringer believes practice the patent.” *Id.* Once the alleged infringer identifies these specific unmarked products, “the patentee bears the burden to prove the products identified do not practice the patented invention.” *Id.*

Here, plaintiffs asserted in the brief that defendants “did not mark the products they contend practice the claimed invention.” (Doc. 111-1, at 32). Plaintiffs, however, gave more detail in the Statement of Material Facts by identifying six products that purportedly practice claims of the ’306 Patent without any marking: (1) NEON AIR; (2) NEON AIR HC; (3) NEON STARTER; (4) NEON SOIL; (5) NEON SURFACE; (6) ENRICH. (Doc. 111-2, at 8-10).

Here, plaintiffs fail to meet their burden of production to show that defendants sold the NEON STARTER product unmarked, because that product does refer to the ’306 Patent. The NEON STARTER refers to the 9,650,306 Patent issued May 16, 2017, and application numbers 15/793326 and 15/792288. (Doc. 111-10, at 5). That document incorporates a Safety Data Sheet last revised on August 22, 2018, so the product was marked as of that date. (*Id.*). Defendants need not offer evidence showing that the NEON STARTER product did not practice the ’306 Patent.

Plaintiffs, however, did meet their burden of production when they showed that the other product labels were unmarked. None of the product labels contain a link to the

website. The ENRICH product label was not marked. (Doc. 111-10, at 3.) The NEON AIR HC product label contains a reference only to the '420 Patent, not asserted here. (Doc. 111-9, at 4). The NEON AIR product label, the NEON SOIL product label, and the NEON SURFACE product label each refer to U.S. Patent Pending Application Numbers 2014/0090432, and 2015/143860. (Docs. 111-9, at 2-3, 6; 111-10, at 1-2). The '306 Patent, however, does not claim priority or descend from any of these patent applications. Instead, it claims priority from provisional application 61/980,675, '306 Patent, Related U.S. Application Data, and bears a Publication Number of 2015/0299062. '306 Patent, Prior Publication Data. Thus, even assuming that application numbers and publication numbers would satisfy the marking requirement, plaintiffs met their burden to show that defendants sold these products unmarked as to the '306 Patent. Again, even though plaintiffs did not show that all six products were sold unmarked, plaintiffs "need only put the patentee on notice that he or his authorized licensees sold specific unmarked products which the alleged infringer believes practice the patent." *Arctic Cat Inc.*, 876 F.3d at 1368.

The burden thus falls on defendants to show evidence that these products do not practice the inventions claimed in the '306 Patent. *Arctic Cat Inc.*, 876 F.3d at 1368. Defendants, however, produce no evidence showing that these products do not practice the inventions claimed in the '306 Patent.

Instead, defendants offer testimony that purportedly generates a genuine dispute of material fact as to whether the products were marked. (Doc. 131, at 21). Defendant Presidion testified that the labels for the Presidion products were marked with the Asserted Patents. (Doc. 131-3, at 35). That same defendant verified in response to interrogatories that after August 2018, it marked its products with the Asserted Patents and marked those products on its website. (Doc. 131-3, at 32-33). Defendant Eco-World claims that its licensee marked the products that it sells. (Doc. 131-3, at 35).

Plaintiffs assert that defendants' testimony is insufficient to create a genuine dispute of material fact. (Doc. 141, at 11). It offers *Von Holdt* for the proposition that "no reasonable juror could find that the patent owner met its burden on the marking requirement even though the patent owner, like Presidion, offered deposition testimony." (Doc. 141, at 11) (citing *Von Holdt v. A-1 Tool Corp.*, 714 F. Supp. 2d 863, 871 (N.D. Ill. 2010)). In that case, the patentee needed to present evidence of more than its "general policy and practice" to address "the specific evidence" that the products were not marked. *Van Holdt*, 714 F. Supp. 2d, at 871 (citing *Hypertherm, Inc. v. Am. Torch Tip Co.*, No. 05-CV-373-JD, 2009 WL 57525, at *3 (D.N.H. Jan. 7, 2009)). The Court does not read *Von Holdt* to hold that deposition testimony is always insufficient to create a genuine dispute of material fact. However, the Court finds in this case that defendants did not create a genuine dispute of material fact as to whether the identified products were marked with the '306 Patent. No reasonable jury would find that these documents were marked with the '306 Patent Number when comparing the unmarked labels with the contrary testimony of corporate representatives.

The Court thus finds that defendants did not show that plaintiffs had constructive notice of the '306 Patent. Thus, defendants are entitled only to damages accruing after the first date of actual notice.

b. Actual Notice

Because the Court found that defendants did not provide constructive notice, defendants are not entitled to damages until the first date of actual notice, which requires "the affirmative communication of a specific charge of infringement by a specific accused product or device." *Arctic Cat Inc.*, 950 F.3d at 864 (quoting *Amsted Indus. Inc. v. Buckeye Steel Castings Co.*, 24 F.3d at 187). Section 287(a) further provides that the "[f]iling of an action for infringement shall constitute such notice." 35 U.S.C. § 287(a).

Here, neither party disputes that defendants moved to file a claim for infringement

of the '306 Patent on December 18, 2019. (Doc. 55). At oral argument, defendants asserted that it is undisputed “Microsource was notified of infringement at least as early as December 18, 2019.” (Doc. 148, at 100-01). Plaintiffs also assert that defendants did not provide any notice of infringement before filing their motion for leave to file an amended answer, which included a counterclaim for infringement of the '306 Patent (Doc. 55, at 30), and thus could not recover damages before December 18, 2019. (Doc. 111-1, at 32).

On this record, no earlier communication constitutes “actual notice.” The Court notes that according to the Third Amended Complaint (Doc. 57), defendant Presidion sent Microsource an email on October 23, 2018, asserting that it was the exclusive licensee to the '306 Patent. (Doc. 57, at 9–10). That email, however, did not name specific accused products, so it does not satisfy the “the affirmative communication of a specific charge of infringement by a specific accused product or device.” *Arctic Cat Inc.*, 950 F.3d at 864.

The Court finds that defendants gave actual notice of infringement on December 18, 2019. As a result, the Court **grants** summary judgment of zero royalties for any infringement before December 18, 2019, but **denies** summary judgment of zero royalties for infringement on or after December 18, 2019.

III. CONCLUSION

For the preceding reasons, the Court **grants-in-part** and **denies-in-part** plaintiffs' motion to exclude evidence (Doc. 112), **grants-in-part** and **denies-in-part** plaintiffs' motion for summary judgment (Doc. 111), and **denies** defendants' motion for summary judgment (Doc. 108).

IT IS SO ORDERED this 23rd day of February, 2022.



C.J. Williams
United States District Judge
Northern District of Iowa